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# Australian micro

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**OPTICAL DISKS**  
A Look Into the Future

**HOW TO DESIGN  
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**YOUR RIGHTS AS A  
COMPUTER BUYER**

**HARDWARE REVIEW** Dick Smith's Challenger



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*Brian Stains is the Symphony Program Manager at Lotus Development Corporation. He was previously involved with the creation of 1-2-3 software and is one of the original members of the company.*

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## Australian micro COMPUTERWORLD

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## ATTACHE'S NEW CASE

ATTACHE Software Australia has announced a new version of its accounting software that can interact with other management software. The major addition to Version 3 is Attache Passport, which is included as a menu option in all the Attache primary accounting software systems. This allows users to transport data from any Attache module to other software, such as Lotus 1-2-3, WordStar and dBase II, and to import non-accounting data for updating their Attache accounting systems.

Other enhancements to Version 3 include more flexible report customisation, interfacing of debtors and stock modules with the general ledger module, and the ability to print report options on the top of reports. The new version also comes packaged in an attractive business attache case, with rewritten and redesigned manuals. The price for each module remains unchanged, and current users can upgrade for \$100 per module.

Attache's Australasian manager, John Winters, said that Attache was limiting the marketing of its product to the leading microcomputer manufacturers, especially those manufacturing IBM PC-compatibles, in order not to dilute the support that Attache could provide to dealers, manufacturers and users. Although this would cost Attache some sales, the result would be a better product and a more satisfied user base.

Winters also announced that agreement had been reached for the full suite of accounting modules to be sold in the US by Wang, Otrona and Tandy, and that negotiations with several other US hardware manufacturers were in progress. He also said that, while the Australasian operation was predicting sales of \$A2m in 1984/85, the US operation was aiming for eventual sales of about \$US8m a month.

Attache's US president, Gary

Blom, said the company was seeking \$US6m in venture capital to finance expansion in the US, and had already raised most of this in spite of the lean time facing computer industry financing in the US. Attache's outlook had been strengthened considerably by the decision of accounting firms Deloitte Haskins and Sells, and Coopers and Lybrand, to support the Attache software internationally.

Blom also announced that a consortium of major microcomputer hardware and software manufacturers, spearheaded by Attache, was developing courses in business computing for incorporation into the curricula of the more than 1100 US community colleges. He said several important colleges had already introduced these courses.

## THE ELITE OF MICROS

SIGMA Data has officially released its IBM PC-compatible microcomputer, the Elite 40. First exhibited with little fanfare at the PC 84 show in Sydney in March, the Elite generated considerable attention from computer trade representatives and visitors.

The Elite will run not only IBM PC software, but is also hardware compatible, offering users the ability to add the most popular expansion boards as easy and flexible upgrade path. More significant is the price: Sigma Data claim that an Elite color system with built-in hard disk drive



Sigma Data's Elite 40, a new IBM PC compatible.



will sell for less than a similar IBM PC with only floppy disk drives, with most IBM PC configurations being 50 per cent more expensive than comparable Elite configurations.

Sigma Data is offering a total package with the Elite, including a 12-month warranty, maintenance service (either on site or over-the-counter), and a full range of hardware options.

## SYDNEY SCA OFFICE OPENED

SOFTWARE Corporation of Australia (SCA) recently opened a Sydney office to provide an improved service for NSW, the ACT and Queensland. At the same time SCA announced details of two new products, Electric Desk, an integrated package for the IBM PC, and 10-Net, a local area network for IBM PCs and compatibles.

SCA distributes a small line of high-quality products, including the MultiMate word processor, backed up by competent technical support, regular newsletters to users, and a five-year upgrade plan.

## TYPESETTING BY COMPUTER

ITEK Graphic Products has released the Digitek modular typesetting system that combines new advances in phototypesetting technology with the functions of a single or multi-user CP/M-80 microcomputer. The system is claimed to be suited for small publications or inhouse reproduction departments which need high-speed and high-quality typesetting plus small business computing applications, including data communications, accounting and word processing.

The new Digitek phototypesetter combines LEDs and fibre optics to



Digitek phototypesetter can act as a standalone micro.

deliver quality type in sizes ranging from five points to 72 points at the rate of 250,000 characters per hour. The terminal, which includes twin floppy disk drives and can function as a standalone CP/M computer, is linked to a 10M-byte Winchester hard disk drive for font and text storage. It can also be linked to additional cluster terminals, letter-quality and draft printers, full-page layout screens, and a modem.

Itek can supply a wide range of CP/M-80 software to run on the Digitek system, including the most popular 8-bit accounting, word processing, spreadsheet and data analysis packages.

The Digitek phototypesetter is significantly cheaper than equivalent single-function systems — at about \$15,000 for a system including the hard disk — and both cheaper and more powerful than the Quadri-tek system it replaces.

## APC III DUE SOON

NECISA has scheduled the Australian release of the APC III for early October. This follows considerable dealer complaints that Necisa had delayed the release to boost the flagging sales of the current APC model. Some dealers have bypassed Necisa and imported directly a number of the new machines to satisfy customer demands for sys-

tems with a greater degree of IBM PC-compatibility.

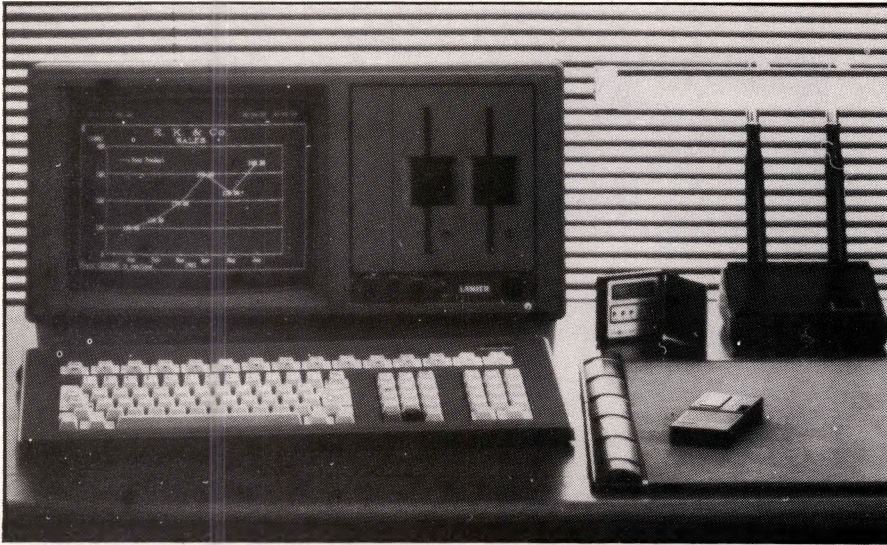
A spokesman for Necisa denied that the Australian release date of the APC III had been deliberately delayed, claiming that Necisa could not get sufficient numbers of the APC III even for inhouse use in service and software support training, and just did not have any machines to supply to dealers.

## AUSTRALIA WAS THERE

AUSTRALIA fielded a heavy contingent at the National Computer Conference, held in Las Vegas early in July. Nine companies, represented by the Australian Trade Commissioner, exhibited a wide range of advanced communications and information processing equipment, including microcomputers and software. Most attention was focussed on — and the most success garnered by — the Dulmont Magnum.

Dulmont Electronics marketing manager, Terry Crews, finalised six US distribution arrangements, and at the same time released details of an IBM PC-compatible expansion system for the Magnum. The push into the US market has come quickly, and has forced Dulmont to expand its manufacturing operations overseas in order to meet expected sales of 25,000 units in its first year of US sales.





Lanier's LBP 1000 acts as a workstation for the System 5000 LAN.

## LANIER'S LAN LAUNCH

LANIER Australia has announced a local area network to complement its new microcomputer, the LBP 1000. The LAN, the System 5000, supports word processing, electronic filing, personal computing and electronic mail.

Dave Vucina, managing director of Lanier, said the new system was designed after research among Lanier users, and was developed with consideration of the needs of the workplace. It satisfied virtually every need of the modern office and had the ability to run third-party applications software if required. It had the advantage that, if the link to the central system broke down, each workstation could still function on its own.

The configuration of the System 5000 is designed for flexibility, being capable of supporting up to 10 workstations and 110M-bytes of hard disk storage, as well as draft and letter-quality printers. The layered architecture used by the system will also allow software additions as new technology develops.

The new LBP 1000 computer that acts as a workstation to the System 5000 is Lanier's first professional

computer, and seen by Lanier as a successful marriage of word processing and data processing for use in the small office.

The LBP 1000 incorporates dual 8 and 16-bit processors, with either 192K-bytes or 256K-bytes of memory, and twin 5¼in quad-density floppy disk drives. A built-in 10M-byte hard disk is also available. Prices start at \$8995 for a single workstation.

## AN XTRA PC FROM ITT

THE Australian subsidiary of ITT, STC, has released the ITT Xtra personal computer. The Xtra is highly compatible with the IBM PC, being able to run most IBM PC software as well as accept hardware expansions. It is priced similarly to the IBM PC, but takes advantage of ITT's expertise in communications technology to offer optional connection to the ITT Courier 3270 networks.

STC's national sales manager for computer products, Todd Hasselbeck, expects the Xtra to be distributed by STC's own Courier 3270 sales force, as well as through Computerland. (In the US, ITT and

Computerland have already begun a joint advertising campaign for the Xtra.) The system will be primarily marketed to those companies already using ITT 3270 products, with the guarantees of a future growth path plus IBM PC-compatibility being major selling points.

The Xtra will be serviced and supported by STC. Users may buy maintenance contracts and join a product support plan which will give them access to a telephone hotline service.

## THE WIMPS AWAKEN

THE Federal Minister of Science and Technology, Barry Jones, opened Information Technology Month at a lunch in Sydney with an attack on the wimpish lobbying of the Australian computer industry. Jones argued that he received more response about proposed licence fees for dogs than he did about the need for Federal government support of home-grown technology.

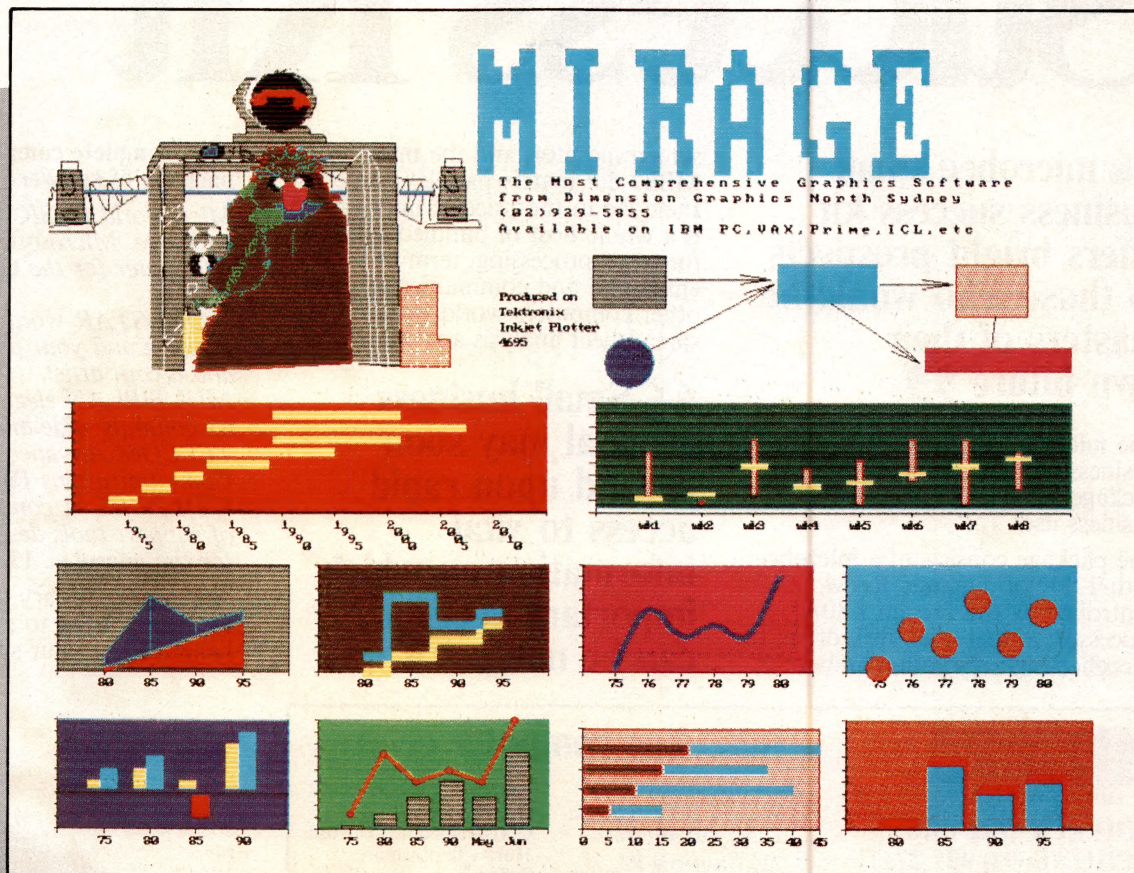
Jones argued that, while Australia had one of the highest standings among OECD countries in pure research, it lagged behind all but two OECD countries in advanced technology exports because there was so little funding of technology development.

The main thrust of Jones' speech was that Australian companies needed to significantly increase their spending on research and development (especially the development aspect), and not depend on the government to provide either funding or legislative initiatives.

Ashley Goldsworthy, the chairman of the National Information Technology Committee, stressed the need for all Australians to be made more aware of the impact of information technology on their lives, a task that required considerable assistance from private industry but was to industry's benefit in the long term.



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Phone and make an appointment with the manager of your nearest **microbee computer centre**. He will set up your system with you and give you **your** first hour of training free of charge with **your** computer. All manuals and self help tutorials are provided so you can learn at your own pace if you wish. Regular user group classes are also held outside normal business hours at very reasonable rates.

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- 2-RS232 serial ports.
- 2 RS232 serial ports. Software selectable baud

rates to 38.4K baud.

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• **DATA LOGGING SYSTEM** also available. • **CONTROL MODULES** (input/output to other devices & appliances also available).





## Action replay at Melbourne PC 84

**Melbourne has seen its first PC show, featuring an unlikely robot, an unstoppable jingle and a most unfriendly panther.**

THE opening of the Melbourne PC 84 Show (Australia's third Personal Computer Show) was surrounded by an air of excitement and anticipation which continued throughout the show, much to the delight of organisers and exhibitors.

The atmosphere was electric... or perhaps electronic would be more appropriate in this case. But, for many this was premature and wasted enthusiasm, for the only real news to come out of PC 84 was the fact that, for the first time, the show was held in Melbourne. It would seem that the blockbuster announcements at the first PC show (including the Apple Lisa and IBM PC XT) have been a very hard act to follow, making subsequent exhibitions pale into insignificance.

Nevertheless, more than 27,000 people passed through the doors during the four days of the show. Whether this was due to genuine community interest or simply the novelty of it all, remains to be seen. A representative sample of the community was evident at the show, as opposed to the more recent Sydney

exhibitions, which are fast turning into trade-only affairs.

The few products that were officially launched at the show had received plenty of publicity before the opening. Those that stood out were the powerful Epson PX-8 briefcase portable, the flood of Asian IBM PC compatibles and an impressive collection of software packages released by Arcom Pacific, including Concurrent PC-DOS, Framework and dBase III.

Apart from these, the Melbourne PC 84 was a re-run of the Sydney PC 84, including exactly the same dealers, products **and** exhibition stands. (Why waste money on new ones when the chances are most of the crowd didn't see them at the last show?)

In fact, the Melbourne PC 84 even **sounded** the same as the Sydney show, with that irritating Commodore jingle blaring out incessantly above the noise of the concourse crowd. The Hewlett-Packard and Apple video presentations didn't stand a chance against it. Fortunately, spectators could retreat to the

relative calm of the other two exhibition levels, but therein lay another problem.

Overall, the World Trade Centre in Melbourne was a far superior venue for such a show than Centrepunkt in Sydney, except for the method of moving between levels. To do so required exiting one level, collecting a pass-out ticket, waiting for an overcrowded lift, and re-entering at the next level, each of which had different entry arrangements. It would seem that the user-friendliness and streamlining concepts that are plugged so hard by the various show exhibitors have not yet filtered through to the organisers.

The two main growth areas evident at the show were books and Asian PC compatibles. The bookshop and publishing company stands continue to increase in size and sophistication, and several displayed the growing trend of bundling software with books. Among the low-cost Asian-manufactured IBM PC compatibles on display were the Direct IPC, Emtex-PC, EME 1600, Limco Panther (alias PC-8088) and the Perseus-1. These machines are visually very compatible as well as being functionally compatible with the IBM PC. Most were prototype models shipped in early for the show, as evidenced by the lack of brochures and technical reference





material. One or two even had labels missing from the system unit, perhaps because the importing company had not thought up a suitable brand name. (Rumor has it that certain overseas companies will even sell you counterfeit IBM labels to stick on if you are that keen to have a computer as close as possible to the real thing.)

Dick Smith's cat-lady was once again at PC 84, as was that pathetic radio-controlled robot who pestered people at the entrance for the duration of the show. This served to lower the tone of the show before one had even managed to get through the front door; even the kids appeared to be getting sick of it after a while.

For many visitors, the high point of the show was the live black panther brought in to publicise the Limco Panther PC-compatible. (Local feline rental agency Adcats has done quite well out of computer shows, ever since Wicat's lion made its debut last year.) Unfortunately, the panther's visit had to be cut short by a few hours after he bared his teeth and threatened to attack the robot.

Once again the Apple stand was congested by the usual clamoring crowd surrounding the row of Macintoshes on display. A new Software Sampler disk has been

added to the collection of Macintosh demo software. Apple's Macintosh has become the ultimate "show computer", never failing to draw a crowd and always occupying a conspicuous site among the various computers on display. Indeed, it appears that the Mac is well on the way to becoming the world's first coffee-table computer.

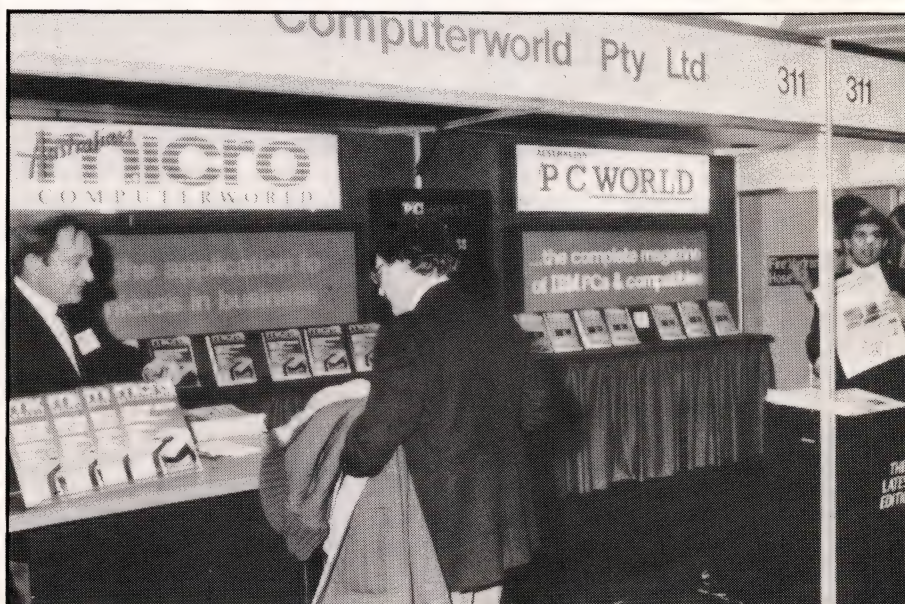
The Microsoft stand also included a bank of Macs, in order to demonstrate the company's Word,

Chart and File programs. Microsoft's support of the Macintosh is certain to grow, as the fate of MS-DOS becomes increasingly uncertain. Concurrent PC-DOS is capable of running programs written for MS-DOS 1.1 and, by offering concurrency and windowing as features, could quite easily upstage MS-DOS as the definitive PC operating system. Arcom Pacific is well aware of this, with Concurrent PC-DOS featuring prominently on its stand, alongside Digital Research's new StarLink package, which allows several terminals to be linked to a PC running Concurrent.

Certain large PC dealers noticeable by their absence were Melbourne companies B.S. Microcomp and HiSoft, as well as software distribution giant Imagineering, which was perhaps too busy gearing up for the long-awaited Symphony launch on July 26.

In terms of venue and crowd throughput, the Melbourne PC 84 was a roaring success, although the lack of surprises and real news came as a disappointment to many. Those of us desperately waiting around for a show with some of the excitement of the good old days will just have to wait until PC 85, scheduled for Sydney's Centrepont on March 13-16.

— IAN ROBINSON





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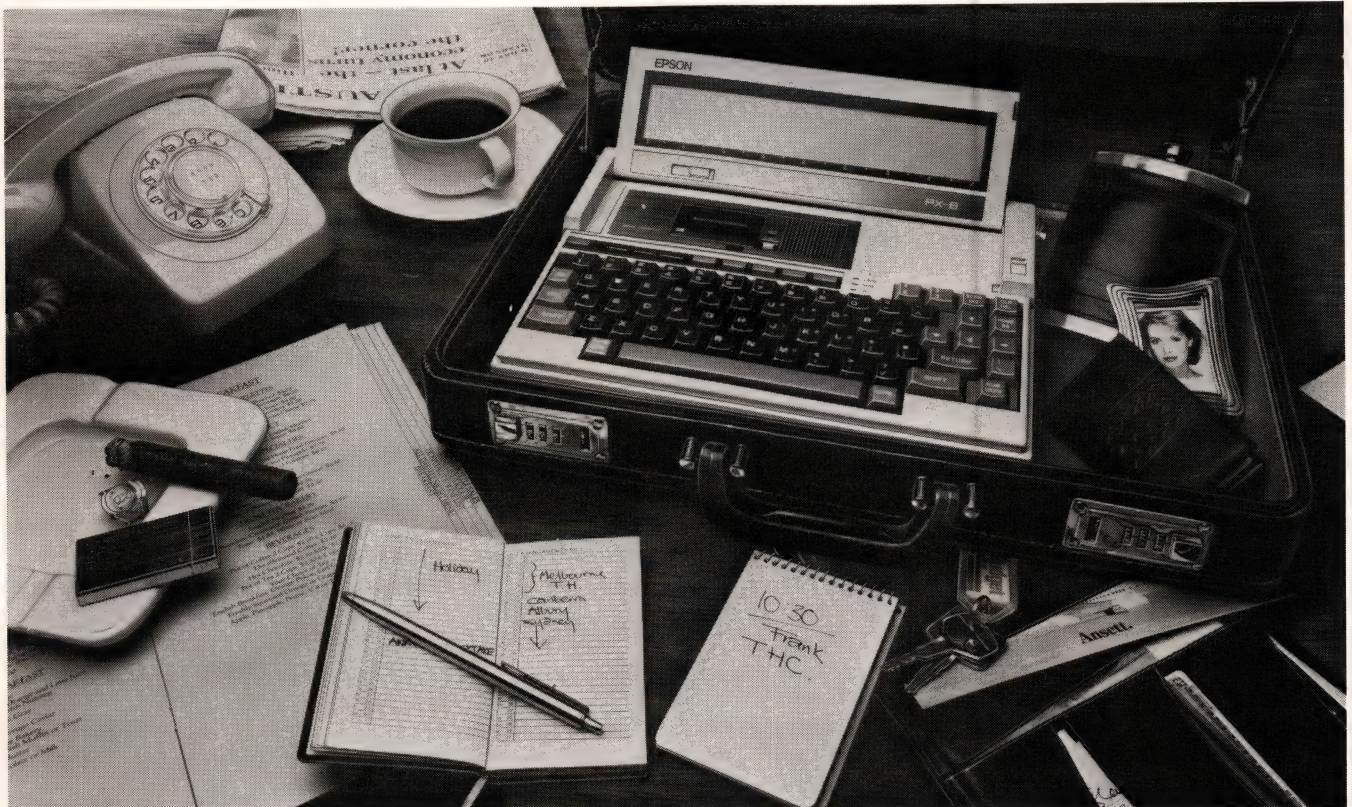
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## ATARI SHAKE-UP

JACK Tramiel, founder of Commodore and its president until last February, didn't wait long to start remoulding his new acquisition, Atari, in his own image.

Promising a company that would work "hard and frugally" to provide economical computers to the public, Tramiel dismissed most of the previous Atari managers and replaced them with an estimated 20 of his own business associates, unknown to those outside Tramiel's circle.

The management shake-up came at the end of a tumultuous week in which Tramiel and an unidentified group of investors bought most of the ailing Atari from its reportedly desperate parent, Warner Communications, for an estimated \$US240 million in IOUs.

Rumors flew that Tramiel had a new computer already in the works, targeted at the \$US1000 computer market, which would compete with Apple's IIc and IBM's PCjr.

Market analysts expect Tramiel to discount current Atari products heavily to clear company inventories this Christmas. Tramiel said Atari would continue to sell its current products throughout the holiday season. After that, analysts expect a new line of Atari computers with little or no compatibility with the present line.

Amid rumors that Tramiel would retrench 900 of the 1000 remaining employees (at press time an Atari spokesperson confirmed that "several hundred" workers were being laid off) at the Californian company, Tramiel was confident about his plans and the company's situation. "I feel the Atari name is the best asset that Atari has," he said. "The products, even the present ones, I believe are superb." Tramiel also confidently predicted that his company "will be able to be No 1 within a year".

Warner Communications sold

Tramiel the home computer and video game division of Atari, retaining only the coin-operated games division and Ataritel, which has been working on an advanced telephone for home consumers. Because of the Atari sale, Warner announced it took a \$US425 million loss for the three months to June 30. Warner slashed the value of Atari's assets when it sold the company, accounting for most of the loss.

Tramiel paid no cash for Atari. Instead he promised to pay Warner \$US140 million plus 13 per cent interest within 10 years and \$US100 million with 9 per cent interest, with interest due regularly, but the principal not due for 12 years. Analysts say Warner practically gave Tramiel the company.

In exchange, Tramiel gave Warner the option to buy up to 32 per cent of his new company at an unspecified price; Tramiel has the option to buy one million Warner shares for about \$US22 each.

## PHILIPS ON MSX TEAM

MICROSOFT'S proposed MSX standard for home computers was given a major boost in mid-July when the giant Dutch conglomerate N.V. Philips announced plans to make and market an MSX computer in Europe, possibly for Christmas. There are already some 200,000 MSX computers in Japan, and a slew of MSX machines is expected to hit the US early next year.

Sources close to Microsoft say they expect some 22 hardware manufacturers to be making MSX machines for the US market next year. In a related development, Kay Nishi, of Microsoft Far East, showed a prototype "MSX Engine" during a discussion on hardware at the Computer Electronics Show in Chicago.

MSX computers employ three chips: the Zilog Z80 or its equivalent

as the main processor, a video chip, and a sound chip. The prototype engine Nishi showed was a VLSI (very large scale integration) version of the three chips that essentially combines them into one micro-processor.

This will make it much easier — and cheaper — to manufacture MSX computers or provide MSX adapters for existing hardware. The MSX chip set will sell for about \$US10 when it goes into production late this year, Nishi said.

## NO CRIMINAL CHARGES

NO CRIMINAL charges will be filed against a Los Angeles-area bulletin board system operator whose 3-year-old system, MOG-UR, was down for about 10 days after police confiscated his equipment after receiving a complaint from Pacific Bell. Tom Tcimpidis is now considering a civil suit against Pacific Bell for prodding police to seize his equipment with allegations of telephone fraud.

"If a lawyer's willing to take it on a contingency basis, I'd be foolish not to (sue)," says Tcimpidis. Los Angeles police took his terminal, monitor, hard disk, modem and about 150 floppy disks after Pacific Bell alleged that a telephone credit card number was posted on Tcimpidis' system and sought charges against him for telephone fraud.

Tcimpidis denies knowing the number was on his board. He was able to retrieve the message from storage when police served him with the warrant. The person who posted the message included automatic deletion after a few days.

The city attorney decided there was insufficient evidence to press charges and approved the return of his equipment, but still asked to meet with Tcimpidis, his lawyer and a Pacific Bell representative at an informal hearing.



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FORMULAE	

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RENT	COMMISSIONS

<b>PROJECT</b>	
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**QUESTIONS & ANSWERS** — when you go into a ROOM META4 asks you QUESTIONS about the type of thing (eg. CUSTOMER INVOICE PRODUCT etc) held in the ROOM and stores away your ANSWERS

**RECORDS** — META4 stores the ANSWERS to a set of QUESTIONS in a room as a RECORD. There can be many RECORDS in a room

**DOORWAYS** — You can move from ROOM to ROOM through DOORWAYS. META4 automatically relates information in one ROOM to information in the next

**BUILDINGS** — A building is a collection of related ROOMS and DOORWAYS. A BUILDING corresponds to the traditional concept of a Data base

### META4 IS PORTABLE

Any applications you develop under META4 will run without change on any computer that META4 runs on

### EASE OF USE

- SIMPLE and CONSISTENT
- HELP — 3 levels for the current
  - BUILDING you are in
  - ROOM you are in
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Designed from the ground up to be totally consistent and as easy to install learn and use as possible

### META4 IS EXTENDABLE

All the features of the system are fully extendable to your own applications. You can add your own BUILDINGS, ROOMS, DOORWAYS and QUESTIONS. You can define your own maps, HELP text and tutorials

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Only META4 is powerful and elegant enough to use itself. All the system documentation is stored in standard META4 BUILDINGS, and printed out as a standard META4 report. When you use META4 to define a new application you answer standard META4 questions in standard rooms in a META4 building

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\*Apple Users Society of Melbourne



## VISICORP'S 'SIMPLE' CUTS

FINANCIALLY troubled Californian software company VisiCorp has retrenched another 70 workers, leaving a skeletal staff of 55 senior executives and key employees. A company spokesperson, Michele Niven, said VisiCorp wanted to return to profitability. "It's very simple," she said.

The company last month retrenched 40 workers, and Niven says both rounds of lay-offs have hit all departments from the top to the bottom rung. A Californian market analyst, Tim Bjarin, is optimistic that VisiCorp will rebound, despite slumping profits, current litigation and the spate of retrenchments. VisiCorp still exhibited three new products at the recent National Computer Conference in Las Vegas — Visi On 1.2, Viewpoint Graphics and PC Paint.

## TAIWAN FEELS PINCH

TAIWAN'S largest commercial computer show ever, Computex '84, ended early last month after a seven-day stint in Taipei.

The main attraction at the show was the island's new crop of 16-bit IBM PC compatibles. More than 10 Taiwanese companies exhibited such systems, but to the dismay of the estimated 1000 potential foreign buyers who attended, the projected products have long lead times and will only be produced in small quantities. This is because of the acute shortage of components, a spokesman said, especially the Intel 8088 chip needed to produce these machines. According to recently released government statistics, Taiwan needs about 30,000 sets of the 8088 a month, but only gets about 10,000.

Nine of the PC-compatible systems displayed were based on a prototype system developed last year by Taiwan's Electronics Research Service Organisation, and have been formally recognised by IBM as not violating any of its patents or copyrights.

Almost none of the Apple Computer Inc Apple II lookalikes — for which Taiwan is famous — were shown. In fact, the show's sponsors warned all exhibitors that counterfeit products of any kind were strictly prohibited. To drive home this point, show organisers awarded cash prizes of \$US500 to those who wrote the best essays and designed the best posters on the subject, "Why Commercial Counterfeiting is a Dead End."

## FRANKLIN GOES CHAPTER II

FRANKLIN Computer, maker of Apple-compatible computers, has filed for reorganisation under Chapter 11 of the US Federal Bankruptcy Code.

In a prepared statement, Franklin president, Morton David said the company was experiencing falling sales and a "strain in financial resources". To date, the company has about \$US33.9 million in assets and \$US22.8 million in liabilities, a spokesperson said.

The company owes significant sums to at least 20 unsecured creditors. Under Chapter 11, a company is protected from its creditors while it reorganises, which usually takes several years. "We will spare no effort to turn Franklin around," David said.

Franklin owes \$US920,483 to Texas Instruments and \$US4.9 million to National Westminster Bank USA in New York, the biggest secured lender.

Franklin is still trying to find a way to pay Apple Computer the \$US657,000 remaining from a \$US2.5 million out-of-court settle-

ment. Franklin and Apple were involved in a two-year legal battle over copyright infringement of Apple's operating system.

Despite problems, Franklin will still offer full technical support for its ACE 1000 and 1200 machines, more than 100,000 of which have been sold throughout the US.

## TANDY FIGHTS EARNINGS DROP

TANDY Corp is planning a major computer marketing campaign, including price cuts on some products, in an attempt to combat the company's first earnings decline in six years.

Tandy executives refused to confirm specific price cuts, but indicated price reductions will play a part in the company's more aggressive computer marketing strategy.

"Over the next six months, we're going to add fuel to the fire," said Tandy chairman John Roach.

The company will spend \$US75 million to advertise its computer products in the next year, he said. Products initially picked for that campaign are the Model 2000, the Model 16, and the Model 100.

Tandy announced an expected 15 per cent decline in earnings for the fourth quarter ended on June 30. The company's earnings decline was due in part to the "rapidly changing pricing and competitive situation in the computer market," according to Roach.

The firm's earnings decline was due in part also to a shortage of microprocessor chips for the new Model 2000 and problems with the supply of terminals and memory boards for the Xenix-based Model 16 system, Tandy executives said. Earlier this year, the firm was forced to delay a marketing campaign for the 2000 because of the chip shortage. Company officials said the Model 2000 chip shortage has been remedied.



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## EVEN WIMPS HAVE TO WALK FIRST



IN HIS address at the opening of Information Technology Month, the Minister for Science and Technology, Barry Jones, stressed two themes that were almost contradictory.

First, he quoted OECD statistics to support the argument that the development of an Australian high-technology industry depended directly on the amount of research and development funding provided by the private sector, and that it was not in the best interest of the industry to look for government handouts.

Second, Jones argued that Australia's high-technology industry received too little government support because it was too wimpish in its lobbying of the government. If the high-technology manufacturers wanted more public sector support, they had to make at least as much noise as any other pressure group.

Both arguments can be applied validly to Australia's infant microcomputer manufacturing industry, but in stressing them, Jones showed a poor understanding of the nature of this industry, and once again proved that politicians are more interested in securing re-election than in serving the best interests of the electorate.

Very little of the local microcomputer industry's profits are spent on research and development, simply because very little is available. The companies with the highest profits are foreign-owned, and their profits are spent on research and development overseas.

The locally owned companies spend a large percentage of their

small profits on research and development, a fact Jones could have determined for himself if he spent less time reading OECD reports and more time attending to his portfolio. But this research and development funding is only a drop in the ocean compared with the amount actually earned in Australia, yet spent overseas, for the benefit of foreign-owned companies.

Australian microcomputer manufacturers have little to offer politicians. They cannot afford mass media advertising campaigns, they directly involve too few people to influence the vote in even marginal seats and they cannot bring pressure to bear from the governments of their parent countries if they lose a large government contract since they do not have overseas parents. The results of lobbying are therefore unpredictable in application and effect.

---

***While some will survive  
and even prosper,  
many will stay where they  
fell, perhaps joining the  
Third World countries as  
a source of unskilled labor.***

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Despite its small size, the local microcomputer manufacturing industry had good prospects. It was starting to get on its feet, with several companies breaking in to the lucrative overseas market after spending considerable amounts on research and development and receiving very little government support. Then the government tripped them by changing the tariff regulations applying to microcomputer equipment.

The local industry wanted tariff reductions and bounties, but the "local industry" is dominated by the overseas-owned giants who will reap the most benefits.

The reduction in tariffs on fully

assembled microcomputer systems will have little effect on local prices since the benchmark price, that of the IBM PC, will not be affected. The cuts may help some importers struggling to compete with IBM, but generally the profit margins on such systems are high enough to make the tariff reduction relatively insignificant.

The companies most affected are the Australian-owned ones which took advantage of the lower tariffs on electronic components to establish local assembly or manufacturing operations. There are dozens of these companies manufacturing everything from microcomputer power supplies to complete multi-terminal systems. They have now lost a marketing advantage, and, with the bounties, have lost the incentive to improve efficiency.

The point is, the assembly stage of microcomputer manufacturing is the lowest level at which Australian companies can compete with overseas companies, and gain the experience needed as the first step to an all-Australian design and manufacturing effort. The local assembly operations of IBM and Wang add little to the development of the Australian microcomputer manufacturing industry.

Australian microcomputer assemblers/manufacturers have indeed been wimpish, moving carefully towards incorporating more Australian content in their systems. They were just starting to walk in an industry where the leaders are galloping to the next generation of computer technology. While some will survive and even prosper, many will stay where they fell, perhaps joining the Third World countries as a convenient source of unskilled labor, because they were tripped by another short-sighted government policy change.

Of course, there are much worse fates in life than being a wimp. Perhaps Barry Jones will officiate at the funeral.



## COLD COMFORT IN COMPUTING?



THE British have seemed almost casual in the way they have gone about cornering the lion's share of the small computer market while US companies have gone through throes of self-destructing with huge losses. Although the reason for the Brits' passion for home computing has never been satisfactorily explained, it may have some connection with the perennially damp and bleak winters that force people inside and encourage them to seek a variety of mind-improving pastimes.

Any suggestion that the ordinary Australian would stay indoors to puzzle out a machine code problem on a computer rather than go surfing or skiing would provoke a response so uninterested it would pass for coma. Let's be honest and admit that people whose world is threshing about with computer programming — the perpetually engrossed community of fiddlers and hackers who buy most of the computer magazines — are really a minority in this country.

This apathy may help to explain why few good small computers are designed from scratch in Australia. Most components have to be imported, and venture capital for large-scale commercial ventures is in short supply, but these would not be barriers to real initiative and a naturally intuitive sense of innovation.

To take a further instance, consider the small British — we're back there again — manufacturing company with the unlikely name of Psion. Run by an energetic Dr David Potter, this company has had considerable experience with the petite, having

written programs for Sir Clive Sinclair's home computers. Obviously inspired by the challenge of being able to produce the world's smallest feasible computer, Psion has just announced it has a computer about the size of the type of watch that once used to lodge in a coat pocket.

It is possible that the Japanese may still hold a lead in miniature computers, but the Psion device is cheap at slightly less than £100, about \$165 at the current rate of exchange.

It is not, of course, destined for spreadsheets or writing novels on the word processor, but Dr Potter says the new computer, which its inventors have called Organiser, does have a use as a portable filing system. Its software programs are contained in compact plastic packs that plug into sockets in the computer.

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**Australian retailers have not caught the jitters nearly as much as in the US, where the fall in demand cannot be explained.**

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In proclaiming its virtues, Dr Potter is no shy violet. "Its unlimited growth potential as a pocket filing system for vital day-to-day information will make it appeal to a cross-section of the public."

Whatever the public reaction — and it will take some weeks to develop — Dr Potter has again shown that Britain can be the master of the small computer. Australia has a couple of items to its credit, specifically the Dulmont Magnum and the Microbee, both of which by comparison are in the briefcase class. To think up a computer which could be dangled daringly from the lapel on a watchchain takes a certain

flair, if not an innate sense of style and elegance, which is still unmatched by imaginations in Australia.

If the analogy that cold weather pushes along the sale of home computers had any merit, retailers in Australia's Eastern States should have been jubilant in July. Some of the chilliest weather this century shoved thermometers down to the snow level, but sales appear to have been no better than expected for the time of year. So far, Australian retailers have not caught the jitters nearly as much as in the US, where there has been a fall in demand that cannot be explained by seasonal or other factors.

But the Americans have always been prone to write off as "toys" such darlings of the British enthusiast as the Sinclair ZX81 and the Spectrum. The tacky rubbery-type keyboards of the British computers and the limited memories and programming facilities have much less appeal in the US, where buyers with higher per capita incomes can afford pleasures such as disk drives and ready-written applications packages.

Essentially, the major market for American computers has been commercial users, and the games segment has remained largely a solitary and highly speculative area with little scope for development.

The benign eccentricity of the British enthusiast in trying to write refined software for uses no one else would think of will probably prevail to keep Britain the most advanced home computing nation in Europe and indeed the world. Perhaps from the vest pocket the computer will be taken into the home for practical application, like knocking up a week's menus spontaneously from items available in food cupboards and refrigerator, or choosing the most apt name for a pet dog from 5000 random entries.

Pass the skis; there's probably somebody working on it right now.



## REAL PROGRAMMERS DON'T . . .



RUMOR has it that **Sperry** is out looking for another IBM PC compatible to **replace the Mitsubishi computer** to which it adds the Sperry label. This is essentially the same machine sold by Leading Edge. I assume that the ROM on each machine differs slightly. I was told that some of the machines have had some problems, but I haven't heard any bad feedback from my "street" contacts about the Mitsubishi machine.

I first saw the Mitsubishi computer a couple of years back. I like it, but with its **proprietary graphics** system and other unique features, I couldn't see how Mitsubishi made it as IBM PC compatible as the company did. I played a little with the Sperry version at the **Houston World PC Expo**, but I couldn't quite get it to run the programs published in a disk-based magazine for IBM PC users.

I'm told that top contender for the new Sperry compatible is **TeleVideo**. Its PC compatibility is super, but few people I've talked to know much about it. TeleVideo still **doesn't understand** what pull-through marketing is all about. You always get the feeling that the company wants to keep its new products a secret.

Meanwhile, expect to see the **IBM PC II** in September. I can't get a good reading on what's in it. A kicker is that the machine, as described to me, **uses the 3½in disk drive**. It isn't made by **Sony**, though; it's either manufactured by **Shugart or Tandon**.

This will **spell doom** for the Tabor 3¼in and Hitachi 3in diskette systems.

The 3½in system is actually

suffering from too much popularity — you can't get the double-sided drives, and the diskettes are in very short supply.

**Missing the Point Dept.** As I've discussed before, Dysan is licensing software of all sorts and putting it on its 3¼in diskettes. I criticised the company for investing in what I thought was a **dead-end project**. A former employee recently told me that Dysan actually may have made a smooth move because all of the software it licensed was with a contract that supposedly gave Dysan rights for less than 4in (not just 3¼in) media. If this is true, it means Dysan can roll out everything from dBase II to Microsoft Basic on 3½in disks for the IBM PC II.

A friend asked me why there was a swing to 3½in as opposed to 96 tracks/in on 5¼in diskettes or something like the state-of-the-art **Drivetec servo-controlled 5¼in** dis-

confusion, and to a hardware manufacturer that means time-consuming phone calls with people asking for help. Instead of using the 1M-byte 5¼in system that can cause confusion in the marketplace, manufacturers are moving to the obviously different 1M-byte 3½in system.

**The kicker**, for which Morrow wants credit, is that if the 5¼in drive makers had simply put two windings on special dual-gap read/write heads, the 96 tracks/in drive could write a fat 48 tracks/in track when necessary, and you'd have the upward-downward compatibility required for product acceptance.

**Drive makers cringe** when they hear this simple idea, because it would have delayed the rapid move toward 3½in media.

**Real Programmers Contest.** Chuck Lundgren sent me a list of office folklore axioms that are going around the country. It's called "Real Programmers", and it says stuff like:

**Real Programmers** don't write specs — users should consider themselves lucky to get any programs at all, and take what they get.

**Real Programmers** don't comment on their code. If it was hard to write, it should be hard to understand.

**Real Programmers** never work from 9 to 5. If they are around 9am, it's because they were up all night.

**Real Programmers** don't write in Pascal, or Bliss, or Ada, or any of those pinko computer science languages. Strong variable types are for people with weak memories.

**Real Programmers** don't write in RPG. RPG is for illiterate IBM drones who can't even program in Basic.

**Real Programmers** don't program in Basic. Actually, no programmers write in Basic after the age of 12.

**Real Programmers** don't program in Cobol. Cobol is for wimpy application programmers.

I think you get the idea. If you have any additions, send them to me at Micro Computerworld. I'll put the best in the column.

**Real programmers don't write specs — users should consider themselves lucky to get any programs at all, and take what they get!**

kette that holds nearly 3M-bytes of data. George Morrow hypothesised about the major reasons for the change and how it could have been prevented.

He thinks the key is that the 96 tracks/in diskette is **not fully compatible** with the 48 tracks/in diskette because it cannot write to a 48 tracks/in diskette. Though a 96 tracks/in can read a 48 tracks/in diskette by skipping tracks, it will screw up the smaller diskette if it writes to it. This is because of the difference in head-gap size.

It is impossible to visually tell a 48 tracks/in from a 96 tracks/in diskette. This means that there will be



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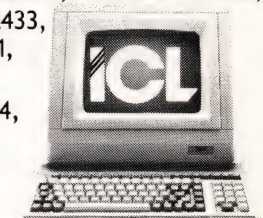
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## COMPETITION/MAC WINNER

**Martin Dougherty, the winner of Australian Micro Computerworld's "Win Apple's Mac" competition, received his prize at the Computerworld offices last month. The Macintosh was presented by the publisher of Australian Micro Computerworld, Alan Power, and the marketing manager of Apple Computer Australia, David Roman.**

### **1. What are the names of the three people who started Apple Computer Inc?**

Steve Wozniak designed the computer, Steve Jobs sold it and Mike Markkula Jr, who had retired after becoming a millionaire from stock options earned while working in marketing for Intel, offered to draw up a business plan after a visit to Jobs' garage. He bought a one-third share in the company for \$91,000.

### **2. What was the name of the first Apple computer and when was it first sold?**

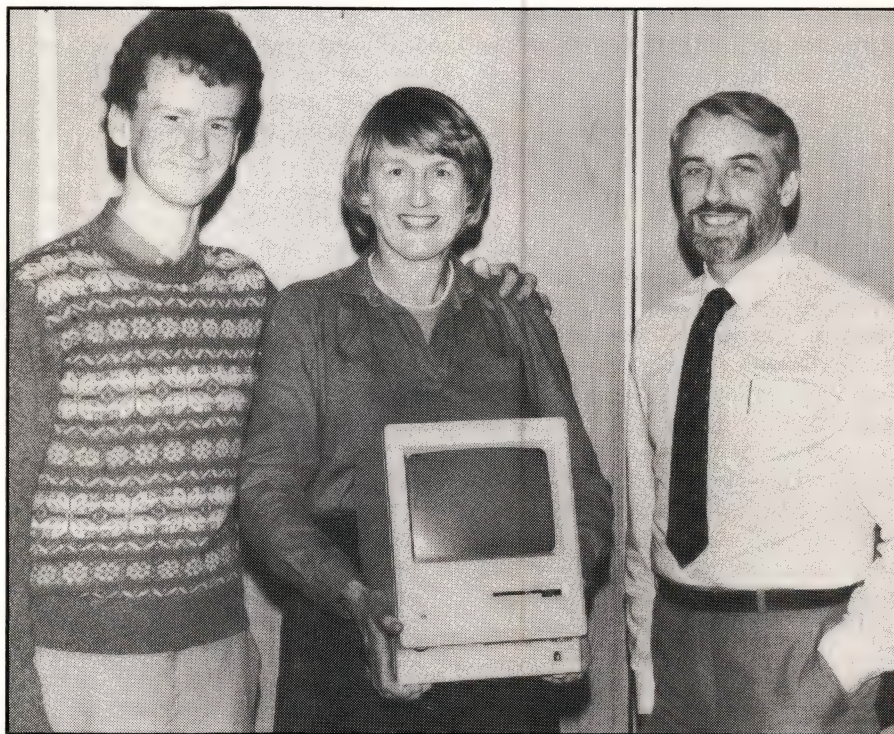
The Apple I computer was designed by Steve Wozniak after buying a 6502 processor for \$20 from Chuck Peddle at the 1976 Wescon computer show. The computer was demonstrated at the July 1976 meeting of the Homebrew Computer Club. Paul Terrell, one of the first computer retailers, ordered 50. Eventually 200 Apple Is were sold.

### **3. How many different models are there in the Apple 32 Supermicro family?**

There are four members of the Apple 32 Supermicro family: Macintosh, Lisa 2, Lisa 2/5 and Lisa 2/10.

Apple has suggested that there will be two more members of the family, a top-end Lisa product and Fat Mac (the 512K-byte Macintosh), but neither has been released.

# MARTIN GETS HIS MAC



Mac winner Martin Dougherty, his mother and Computerworld managing director Alan Power.



## STATE OF THE ART/OPTICAL DISKS

**A new technology is set to revolutionise data storage for personal computers — and force head-to-head battle for supremacy between Japan and the US. Kim Bergheim and Christine McGeever report.**

# OPTICAL DISKS— Seeing Into the Future

A REVOLUTION in data storage, in the works for more than 20 years, may begin to invade the personal computer market by the end of this year and bring a second technology — the laser — into common use.

At the annual Business Faire in Tokyo in May, eight Japanese companies, including Canon, Sony and Sharp, exhibited the fruits of years of labor in storage technology: optical disk drives capable of storing hundreds of thousands of megabytes on a single platter the size of an LP record. The devices use the highly controlled light and heat of a laser beam to record and read information on disks that resist the wear and dust that wreak havoc with magnetic disks. The ability of scientists and engineers to focus the laser beam into incredibly small areas means data can be packed hundreds of times more densely on optical disks than on magnetic ones.

The Japanese manufacturers also managed to solve a key problem with the technology: some of their optical drives can not only write information on the disks and read it back, they can also erase the information. Although most optical disks now cannot be rerecorded, that capability could catapult the devices into a head-on battle with

magnetic hard disk drives.

In the United States, where the idea for the devices originated, a handful of small startup companies are preparing their own assault, aimed at introducing optical read-only memories (OROMs) to the personal computer market by the end of the year. Such devices, using specially prepared 5¼in rigid disks, can store up to 550M-bytes of information on a single platter.

The arrival of these products is seen by many as the herald of a new kind of information access, one that will give vast amounts of information to the average consumer cheaply and conveniently. Projected retail prices of blank optical disks are startling when compared to the prices of today's magnetic media. One estimate projects the price of a 100M-byte optical disk as about \$60. The same amount of magnetic storage would require as many as 300 5¼in floppies and would cost 20 times as much, about \$1200.

There is already dissent between Japanese and American manufacturers over the size of the optical disk. Although the Japanese have developed read-only memories based on the available 4.72in compact audio disk being peddled to stereo enthusiasts, American com-

panies are sticking to 5¼in disks, a size already accepted as a standard for digital storage. The 4.72in optical disks are already being mass produced in Japan for the audio market, and are readily converted to digital use. But American manufacturers will have to find new producers of 5¼in optical disks.

US manufacturers are also putting up a verbal defence to the Japanese claim of superiority in the development of more sophisticated products, like erasable optical disks. American makers say they are confident that erasable technology is not the be-all and end-all of optical storage, and are concentrating their efforts on read-only and write once/read technology.

Research in laser recording began about 20 years ago in the United States. In read-only techniques, a fine laser beam, focused to a point one micron (a thousandth of a millimetre) wide, is used to make a mark of the same dimension on a thin layer of metal, polymer, or a combination of both (see box at right). Millions of such marks can be placed on a disk in a spiral track to represent the numerical language a computer uses. Lasers can not only store smaller bits but can also be used to pack the tracks together



# HOW OPTICAL DISKS ACHIEVE FANTASTIC CAPACITIES

AT THE heart of the fantastic storage capacities of optical disks is a painstakingly developed recording technology based on the fact that a point of light can be focused to a minuscule size. An optically recorded disk can hold 10 times as much information — a one or a zero — in an area that measures one micron or less in diameter, about 50 times thinner than a human hair. The spiral tracks of information recorded on an optical disk are a mere 1.66 microns apart from centre to centre. Although a bit of magnetic data is about the same size, the concentric tracks of a magnetic disk are about 260 microns apart from centre to centre.

Creating a master disk with such limitations requires extremely precise recording machinery. No metal touches metal. Cushioned-air bearings (which use pressurised air to separate surfaces) allow the write head to move in a precise spiral. The head, suspended on a moving arm above the disk, focuses the laser on the disk through a lens similar to a microscope's focusing lens. Air-cushioned legs in the mastering machine alleviate minor vibrations that, at this level of tolerance, could spell trouble.

Currently, a master optical disk is created without using any of the time-saving techniques used in creating audio or magnetic digital masters. An hour-long program requires an hour to master, according to the president of Laser Video, Wan Seegmiller. Once the desired information has been put on a master read-only disk, duplicates can be made quickly and inexpensively using a stamping technique similar to that used in making LP records.

Playback equipment — the drives — must be able to duplicate the precision used in recording. The playback head must be able to find and follow the 1.66-micron-wide track, keep it in focus,

and transmit it accurately.

The blank optical disk is constructed of a layer of heat-sensitive metal film, organic polymer (plastic), or a combination of both, deposited on an aluminium platter similar to that used by magnetic hard disks. Smaller, lower capacity disks, such as the 4.72" or 5¼in disks, often come with the coating pregrooved on plastic or glass substrates. If a disk already has a groove, the mastering process requires less precise — and cheaper — tracking mechanisms. This process, however, requires an additional laser assembly to cut the unencoded groove, which adds a manufacturing step.

Optical recording techniques represent digital information by marring the surface of the disk in a number of fashions. A tiny mark in the surface is used to represent the binary 1; an unchanged surface represents the binary 0.

Three recording methods exist to create optical read-only memories (OROMs) and write-once/read memories:

- **Ablative Recording**, in which the laser creates pits in the sensitive coating layer.
- **Bubble-Forming**, in which heat from the laser generates a tiny volume of gases in an underlying layer of a special polymer. The gases become trapped and form a bubble in the surface of a metal film atop the polymer layer.
- **Crystalline-To-Amorphous Phase Change**, in which the reactive layer of the disk is changed from light-reflecting to transparent by the writing laser.

Some of the erasable disks expected by the end of the year will also use a crystalline-to-amorphous method of recording. Most of the disks will use a combination of magnetic and optical recording methods, a technique known as magneto-optic or optically assisted magnetic recording.

more closely than they can be packed on magnetic disks. While the tracks on the latter are spaced about five microns apart from centre to centre, laser tracks can be packed 1.66 microns apart. The combination of smaller bits and denser tracks is what gives optical disks their higher density.

American researchers saw laser technology as useful for entertainment, such as audio and video reproduction, as well as for the recording of digital information. The idea of optical mass storage also appealed to the Japanese, who began exploring the field in hopes of eliminating mounds of paper archival records. Such records are difficult to store on computers because of the large amount of storage required to represent the thousands of characters in the several alphabets and pictographs in the Japanese language.

Predictions have abounded for a number of years that optical storage would take hold by 1982, 1983 or early 1984. Despite the current scarcity of the devices, prognosticators are still holding fast to 1984 as the year optical disks will begin to take hold.

Major investment in the United States is beginning to be directed





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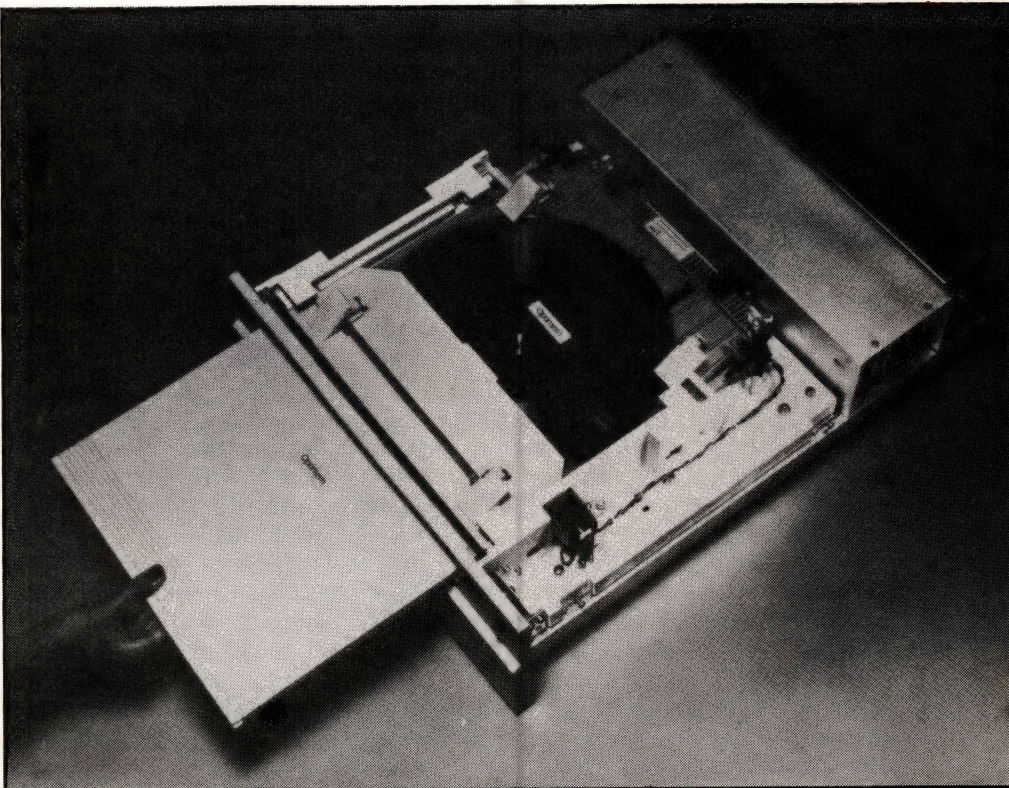
toward optical disks. Tallgrass Technologies Corp recently became a partner in an \$8m research and development agreement to develop optical disk drives with CPT, a leading office automation company, and Information Storage Inc (ISI), a supplier of fixed disk and tape storage systems.

Tallgrass and CPT have each contributed \$4m to the development of ISI's 100M-byte read/write optical disk drive, which will fit into the drive slot of a personal computer. ISI will sell the drives to computer manufacturers at a wholesale price of about \$1000. The current price of a Shugart hard disk drive with two hard disks is \$667. But the total capacity possible with the drive is only 13.33M-bytes.

Optical storage may still be expensive on computers, but the compact audio disk has given the Japanese a leg up. Sony in particular has a strong hold on the home entertainment market with compact audio disks. In 1983, half a million compact audio players were sold worldwide, 300,000 of them by Sony alone. That has triggered the mass production of the 4.72in optical media Japanese manufacturers are using in some of their drives. American companies view the 5¼in format as an established standard in the personal computer market, according to Art O'Connor, a senior consultant at ISI. "It doesn't pay to deviate from the industry standard as far as we're concerned," he says.

Like LP records, the audio disks are available in prerecorded form only. The songs from a 12in record album can be squeezed on to the 4.72in disk by laser-mastering, then mass-reproduced and played at home by a small laser audio player added to a home stereo system. Laser-recorded audio disks offer far better sound reproduction and are sturdier than standard recordings. Dust and fingerprints don't affect their sound quality, and they can be stored in the glove compartment of a car in 50-degree heat.

Those same properties are useful in digital information storage. A 4.72in optical disk of computer data



The inside of Shugart's Optimem 1000 optical disk drive.

will carry 550M-bytes of information, the equivalent of nearly 700 thick novels, or about 275,000 pages. By comparison, magnetic hard disk drives typically store less than one-tenth of that on a 5¼in platter, and must be carefully protected from dust, smoke, fingerprints, heat and other damaging conditions that do not bother a laser-read optical disk.

Like audio recordings, however, laser recorded OROMs are duplicated by a stamping process; the information, once recorded on a master disk, cannot be edited or erased. But it can be stored in the memory of a computer, or transferred to another disk. Massive software packages can be mastered and duplicated easily using optical techniques.

That prospect may be relatively close to reality. According to Ed Rothchild of Rothchild Consultants, IBM has ordered 1.5 million 2in, 40M-byte OROMs from an undisclosed Japanese firm as an add-on product for its personal computer line. One use for the disk is to supply

PC-IX, IBM's version of Unix, on a single platter instead of the several floppies on which it is now supplied. Rothchild expects the drive to sell for about \$900. Disks for the unit will likely be pressed by 3M Corp. The IBM PC XT/370 will have an American 5¼in optical drive mounted in the main unit as well, says Rothchild.

Large programs aren't the only candidates for OROMs. "Because the disks are removable," says Rothchild, "you're going to see huge databases put on to the disk. (We're) talking interactive encyclopaedias. (Optical disks) will become a commodity. People will be able to have a single-user system that has a personal computer, a document scanner, an optical disk, a high-resolution monitor, and an output printer with software selling for about \$15,000. You'll do data processing, word processing, you'll store documents, you'll store images."

Information Access is already exploring the possibilities of publishing on optical disks. The company publishes a magazine index of more



than 400 periodicals accumulated on a monthly basis for timesharing and microfilm reproduction. The index runs on Dialog, an online database service.

"[Optical recording] is a publishing medium," says Dick Carney, vice-president in charge of product development. "The reproduction of it is not very different from making records. Once you get a master created, it's just stamping out additional copies."

The read-only technique won't be limited to disks, nor to gigabyte. Already, optical recording techniques are being applied in the production of the Drexon optical card by Drexler Corp.

Similar in appearance to a credit card, the read-only Drexon card carries 2M-bytes of recorded data in a stripe on its face. It is not yet commercially available, because it requires a reading device not yet on the market. But Drexler has licensed 12 manufacturers, including Canon, Fujitsu, Honeywell, NCR Corp, Toshiba and Wang Laboratories, to make the hardware.

The reading machines could be installed in the side or front of a computer for reading software programs. But Drexler's director of business development, Robert Carter, says that the card will have

almost unlimited potential as a personal recordkeeper. Vast amounts of medical or financial information can be stored on the wallet-size card, he says. While the laser cards themselves can be mass-produced now, Carter says that Drexler is waiting for the necessary hardware from the licensed manufacturers. Carter estimates that a reading machine will cost about \$100. The card itself will cost a quarter of the price of floppies with the same capacity.

Carter sees the opposing Japanese and American "marketing styles" as stifling. Consultant Stan Jarvis agrees. "The Americans are all startups, and they won't be introducing until next year," he says. "There has been some excellent work done by smaller American companies that cannot capitalise on their own development. Big companies have dropped out altogether [due to] marketing problems or mismatches. Sometimes part of the plan slows down or speeds up, and nobody really notices until it's too late."

All this has been a boon to the Japanese, he says, and might enable them to dominate this field as they have other computer peripherals, such as printers.

"Meanwhile, the Japanese have been quietly working away in their

laboratories," he says. "The Japanese have a different structure and have been working slowly on solving the long-range problems. While the past six months have produced several startups in the US, other than that, we might be looking at a totally Japanese technology."

Rothchild, who has been following the development of optical memories since 1974, has made some predictions about the Japanese and American markets based on his company's findings. One conclusion: although it appears Japan has an advantage over the US in grasping the more advanced technology of optical erasing, that is not actually the case. By 1990, he says, 553 million optical disks will be sold and operating. Of that figure, 90 per cent will be 5¼in or smaller, 50 per cent will be erasable, and 50 per cent will be write-once. Write-once disks are useful because many types of data need to be archivally stored. They allow an audit trail of traceable information to be left on the disk. One large-capacity optical disk could store a year's worth of financial data. **m**

*Kim Bergheim is a reporter and Christine McGeever is a researcher with Infoworld.*

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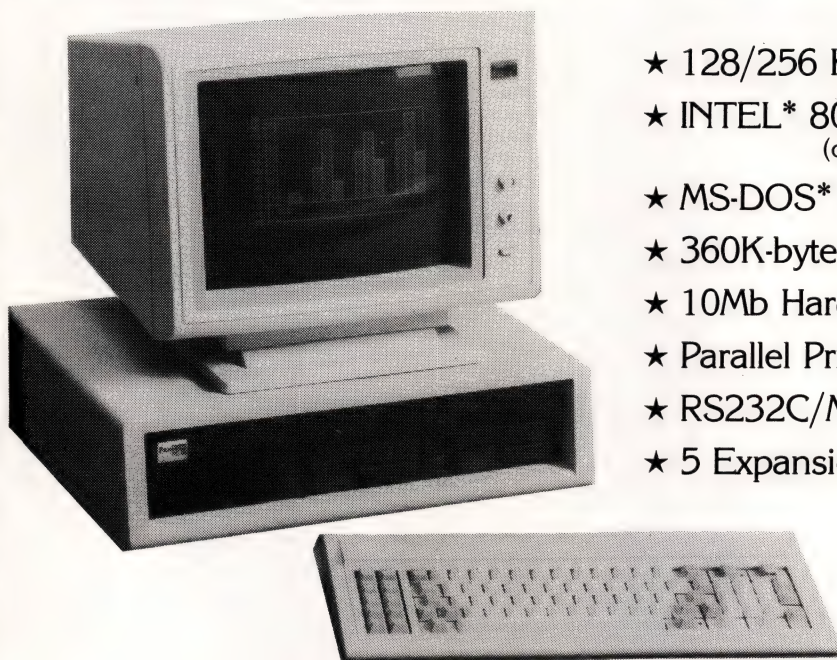
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**While AT&T takes aim at IBM in the huge PC battlefield, Compaq has decided to shift into overdrive with its desktop Deskpro PC-lookalike. In the background, Electronic Arts is trying to organise the low end of the business world. We review three more state-of-the-art computer solutions.**

# PREVIEWING the Products

## ELECTRONIC ARTS' GET ORGANISED

ELECTRONIC Arts is aiming a \$US199 integrated software package called Get Organised at the low-end business/high-end home software market. The program, scheduled for release in September, combines functions similar to those in the PFS:Write, PFS:File, and PFS:Access series of applications software from Software Publishing in Mountain View, California.

Get Organised integrates seven applications, resides on a single disk, and requires 256K-bytes of random-access memory on the IBM PC.

Of the seven applications — all of which use color windows — word processing is the most prominent. Other functions augmenting a basic file manager are an address book and index card file. Users can create documents and merge them with files of names and addresses without leaving the program. A notepad to transfer text from one application to another is easily reached, and you can call up a full-function calculator during most operations.

A basic telecommunications program, used only to transfer text files, is also included. The address book serves as an auto-dial phone list. The product also includes a function-rich personal calendar.

Get Organised was developed by Organic Software, the same group that developed VisiSchedule for VisiCorp. Organic Software was acquired by Electronic Arts of San Mateo, California, in February.

Although the applications provide mainly the bare-bones basics, some of the functions in Get Organised approach those of more expensive programs. The program has user-definable templates that allow such function strings as automatic sign-on in the telecommunications program.

Unlike virtually all of the integrated packages on the market or being announced, Get Organised economises on memory by omitting a spreadsheet and bit-mapped graphics. "Not everyone needs a spreadsheet," says Electronic Arts president William ("Trip") Hawkins. Get Organised uses text-character graphics to make windows.

"[Ashton-Tate's] Framework and [Lotus] Symphony have different design philosophies," Hawkins says. "Symphony says that all applications are part of a spreadsheet and Framework says that all applications

are part of a document. Get Organised's philosophy treats everything like text."

Get Organised's goal is to "bridge the home and the business market," Hawkins says. "When we showed dealers that it cost only \$199, they realised it would really move."

## COMPAQ DESKPRO

AFTER a record-breaking first year, Compaq Computer Corp., of Texas, aims to capture more of the 16-bit personal computer market with its introduction of a four-tiered family of desktop computers with "overdrive".

At first glance, the new models look like IBM desktops with a different label, from the 12in monitor sitting on a rectangular main unit with horizontal drives to the standard IBM PC keyboard (also standard on Compaq portables). But on command, a small red light at the left front of the computer shines green, and the new Deskpro shifts into its "extra gear", powered by an 8086 chip that propels it two to three times

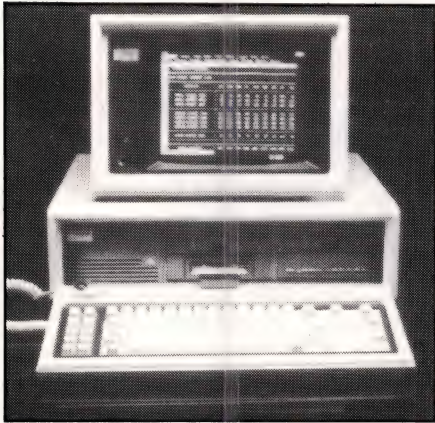


faster than the standard 8088.

Called the "bullet" during development, the four machines in the Deskpro line range from the basic model, with 128K-bytes of random access memory and single half-height floppy disk drive, to the top-of-the-line, 640K-bytes RAM model with a single floppy drive, 10M-byte hard disk, 10M-bytes back-up tape drive, and asynchronous communications/clock board — all self-contained. The basic machine has a suggested retail price of \$US2495; the fully stocked model, \$US7195.

Between them are two models with the same basic components: one sporting 256K-bytes RAM and dual floppy drives for \$US2995; the other with 256K-bytes RAM, a single floppy drive, 10M-bytes hard disk, and a communications/clock board for \$US4995. The 12in monitor, which can be purchased separately, is available in either green or amber. Both types feature dual capacity for text and graphic display.

Compaq marketing officials knew about IBM's recent price cuts when



Compaq's twin disk drive Deskpro.

they set the prices for the Deskpro line: though Compaq's prices are higher, its machines have a few more features than the IBM PC line.

Company leaders say the Deskpro series will help them hold on to the No. 2 spot in PC-compatible sales, which Compaq claimed in 1983 with a whopping \$US111 million in first-year revenues. Compaq says that's a record for a US company.

## AT&T PERSONAL COMPUTER

AT&T, whose corporate structure was dismantled in January as a result of a government-ordered divestiture, has released its long-awaited micro — the AT&T Personal Computer, an 8086-based unit that is compatible with IBM's PC. Though the divestiture seriously disrupted the company, it also allowed it to enter the computer market in March.

Only through such a strange twist of events could such a large technology company have ignored the computer market for so long and then entered it so suddenly. Though there had been much speculation about the potential impact of AT&T selling a personal computer, AT&T's government-granted monopoly on telephone service had prohibited its entry into computer markets.

The presence of the Intel 8086 microprocessor makes the AT&T PC a true 16-bit microcomputer. It runs the MS-DOS 2.1 operating system, and can be connected via a network to the AT&T 3B2/300 supermicro as well as the company's minicomputers and private branch exchange (PABX) telephone systems. It is this availability of network connections to advanced office systems that sets AT&T's microcomputer apart from the pack of IBM PC clones.

Networking aside, the AT&T PC is a revved up version of the IBM PC that attempts to best its opponent with a bounty of features. Built by AT&T's European marketing partner, Olivetti, the hardware is based on that firm's M24 computer. Its microprocessor sports an 8MHz clock speed (which is twice that of the IBM PC), 128K-bytes of random-access memory (RAM), serial and parallel ports, and a built-in clock/calendar with a battery. All these features are on the machine's main circuit board, leaving the AT&T PC's seven expansion slots free for use by expansion boards supplied by independent manufacturers or AT&T.

AT&T is producing its own expan-

sion memory board, which can add as much as 640K-bytes of extra memory while taking advantage of the 8086's true 16-bit architecture. "We've done an interesting thing with the bus structure," says product manager Ed Cote. "It's a 16-bit bus structure, but 8-bit boards available on the market will plug into the slots and run without modification."

Another feature of the AT&T machine is its 640 x 400 pixel color display, with four colors standard and 16 colors optional. A built-in graphics interface is used to operate this high-resolution screen, eliminating the need for an additional graphics board. For those who neither want nor need the high-resolution color display, a monochrome screen with dual graphics/text capability similar to that of the Compaq is available, according to AT&T officials.

The machine comes in three configurations: with one 5¼in, 360K-bytes floppy drive; two such drives; or one floppy drive and a 10M-byte hard disk that can be integral or external. Just as the floppy disk versions are operationally compatible with the IBM PC, the hard disk version is operationally compatible with the XT, although the AT&T machine requires an additional card that takes up one expansion slot when a hard disk is added.

What is still uncertain is the price of all this technology. The price was still undetermined largely because IBM cut the price on its PC only days before AT&T officials planned to fix the price of their hardware. The feature-laden machine is expected to sell at 10 per cent below the price of the IBM PC.

Service for the machine will be handled through the retail chains, direct sales force, or through another channel that is expected to figure heavily in AT&T's marketing of the machine — repair by mail.

Owners are encouraged to get into the guts of the machine and send the broken part back to AT&T for service and replacement.

AT&T's biggest challenge was the development of the machine's basic input/output system (BIOS), which determines the level of IBM PC



compatibility. In AT&T's case, the BIOS had to match up with IBM computers and still leave room for the hardware in AT&T's diverse product line. In light of recent IBM law suits against compatible makers Corona and Eagle, the BIOS "had to be absolutely pristine legally," Cote says.

The irony in this drive toward total IBM PC compatibility is that AT&T's



AT&T's PC made by Olivetti.

own software won't work on the machine. Because the BIOS mimics that of IBM closely enough to let the machine run, without modifications, programs such as Lotus 1-2-3, Microsoft's Word and Multiplan, MicroPro's WordStar, and Ashton-Tate's dBase II, it is unable to run AT&T's all-star operating system, Unix System V.

The AT&T PC manages to simulate multitasking with a technique called context switching. "Context switching is the data equivalent of a telephone 'hold' button," Cote says. Users can freeze one program and switch to another to perform a second task, such as receiving information from a corporate database or another computer. The new information can be utilised by the first program, which remains intact during the operation.

AT&T hopes to make its PC attractive to corporate customers in light of a recent announcement on the part of IBM that it won't offer a local-area network (LAN) for at least two years; many of those customers

are questioning whether IBM will ever announce a full-blown LAN.

AT&T has announced two LANs that work together. The 3BNet, which supports RS232, Ethernet, and Omninet protocols, works in conjunction with the ISN network to connect AT&T PCs to each other and to other peripherals. The PC interface to the 3BNet, announced last March, allows all MS-DOS machines to exchange data with a Unix-based system at 1 megabit per second and use any 3B2-type computer as a central information repository. Users can transfer a dBase II file from the AT&T PC to the Unix-based 3B2/300. When the two networks are working in concert, the AT&T PC has a communications path starting at the PC Interface and going through the 3BNet and up to the ISN. The ISN can be connected to almost any AT&T office machine and transfer information at a rate of 8.64 megabits per second. ISN connections are made with either fibre optic wire or twisted pair copper wires.

AT&T's telecommunications roots are evident in the capabilities of this setup. The ISN network permits the connection of the AT&T PC to AT&T's System 85 or System 75 PABXs. The network will eventually provide a phone management system controlled through the AT&T PC. AT&T plans to sell a connection to the micro that will allow a telephone to reside within the machine and use the keypad as a dialer.

Product manager Cote downplays product positioning, saying, "I think it's a good machine all by itself . . . there's really no great mystery surrounding the development of the BIOS." But Cote also says that the machine was developed with all of AT&T's other office machines in mind.

MicroAge computer chain president Jeff McKeever is thankful for yet another major player in the micro market. "AT&T's presence brings a new demand and a new interest to the market," he says. "A lot of people say that IBM is the big market presence, but AT&T's is just as important." 

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**Dick Smith's British-built Challenger is designed as an IBM PC compatible. But it will find it hard going to survive the challenge from Asian imports, both on price and features, reports Ian Robinson.**

# DARTH VADER

## Meets the Micro

FOLLOWING hard on the heels of the success stories surrounding the IBM Personal Computer and its clamoring crowd of compatibles came the news that Dick Smith Electronics was to leap on to the PC-standard bandwagon with its own version.

After the usual preliminary bell-ringing and whistle-blowing that tends to accompany such announcements, the Challenger was distinctly noticeable by its absence. For several months, this embarrassing silence was interrupted only by a few special guest appearances (usually shared with the Cat computer) at various computer shows around the country.

Now at last the much raved-about Dick Smith Challenger has finally been unleashed upon the IBM PC-buying public, opening up yet another new market for the notorious Electronic Dick.

### WHAT IT LOOKS LIKE

Darth Vader is the image that springs to mind when one sees the Challenger for the first time — big,

black and chunky, with an oversized keyboard and imposing system unit. (This was quite a surprise because current Challenger advertisements feature a whiter-than-white model.) At least it makes a change from some of the more recently-released IBM PC compatibles, which seem to be attempting 100 per cent visual compatibility as well as functional compatibility. Darth Vader turned out to be a good guy in the end, anyway.

Although bulkier than the IBM PC, the Challenger lacks the solid and secure feeling of its forebear, having a cheap plastic look about it that is reminiscent of the early Tandy machines. The Challenger is not quite as heavy as the IBM PC, although moving it about becomes an awkward and clumsy exercise, because the system actually consists of two separate black boxes linked by ribbon cables on one side. (You also have a monitor to contend with).

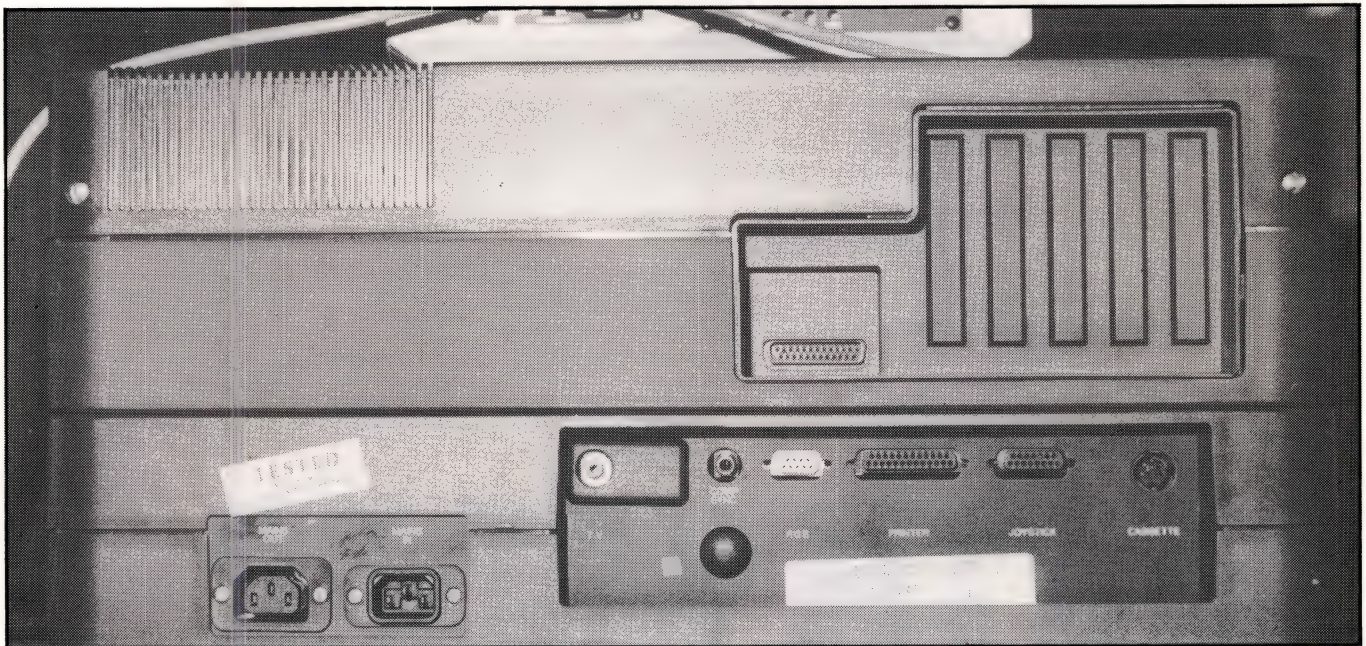
On the other hand, the Challenger keyboard plugs into the front of the machine and fits neatly inside a special enclosure within the lower system unit — definite im-

provements on most other desktop PC compatibles. Another improvement is the fact that the main power switch is also located on the front end of the system unit, rather than on the rear panel.

The Challenger is actually a renamed version of the Advance 86 computer, manufactured in the UK by Ferranti Computer Systems Ltd. (In fact our review machine arrived in shipping cartons bearing the Advance 86 logo, as did the bundled software disks.) Following the overwhelming success of the Sinclair ZX81, black plastic computers seem to have captured the imagination of the British computer-buying public, although any similarity with a Sinclair machine ends there.

The main system unit motherboard, although packed with features, is quite compact, due to Ferranti's efficient use of specially-designed LSI chips. As well as the 8086 microprocessor, serial and parallel ports, and video output hardware, this motherboard contains slots for a possible 256K-bytes of RAM and an optional 8087 numeric coprocessor.





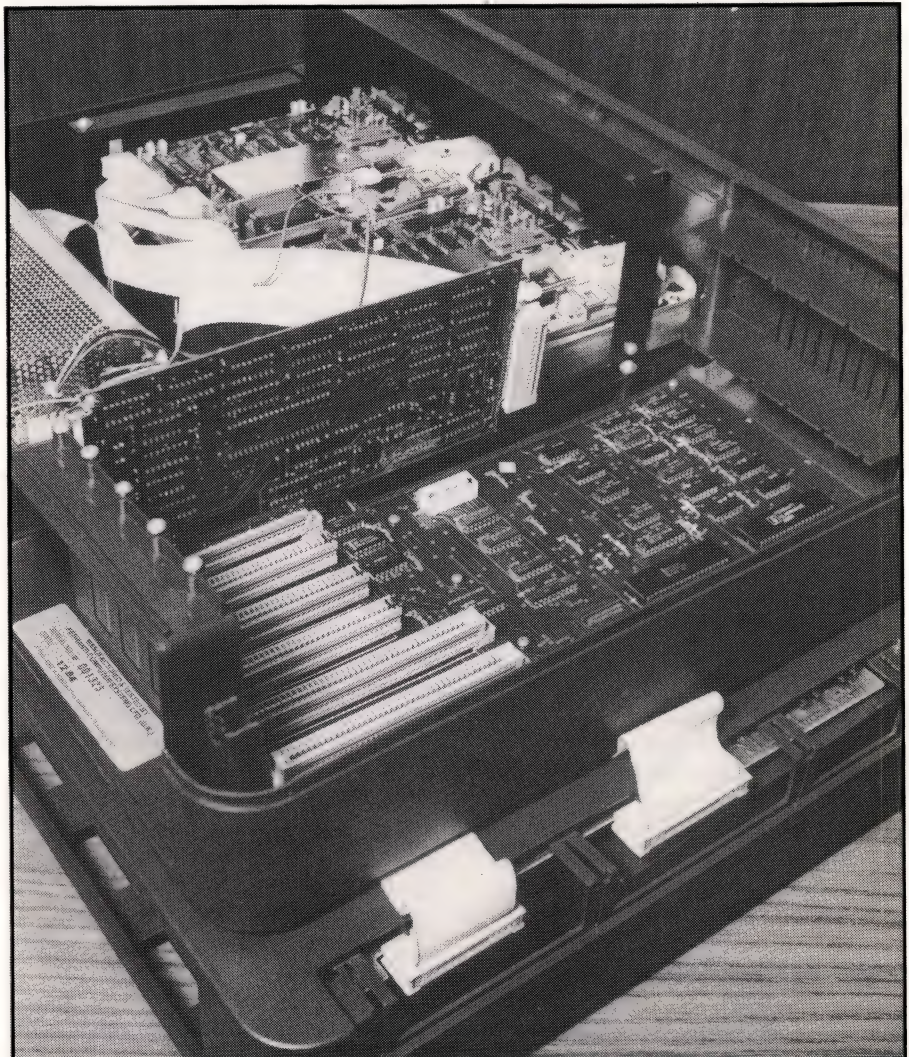
△ Challenger backplane, showing I/O port and plastic knockout panels.

Interior of Challenger, showing disk drives, expansion slots and a lot of wasted space.

Surprisingly, when it is powered up, the Challenger makes more noise than the average PC compatible. In addition, the Dick Smith color monitor emits a very high-pitched whine, which could become most distracting after many hours of use. On the other hand, the slimline disk drives were a good deal quieter than those of the PC, both in normal operation and when accessing disks.

## HARDWARE

The Challenger consists of a system unit, slightly lower and wider than the IBM PC unit and an optional expansion unit that is roughly twice as high and designed to sit on top of the system unit, connected via two ribbon cable terminators. While the minimal (system unit only) Challenger functions as a bare-bones 8086 personal computer, it has no disk drives or expansion slots, so its claims of IBM PC-compatibility should be taken with a grain of salt. (The amount of IBM PC software





available on cassette is extremely limited, if not non-existent.)

Once the expansion unit has been added, however, the Challenger is transformed into a very much more IBM PC-compatible computer. Four PC-standard expansion slots are provided, along with two unusual elongated expansion slots. One of the standard slots is used by the disk drive controller card, leaving three remaining — plus the two elongated slots which are designed for boards that take advantage of the extended data bus of the 8086 microprocessor. The IBM PC and most of its imitators employ an 8088, which communicates to the outside world in eight-bit words (bytes), whereas the Challenger contains an 8086, which talks in 16-bit words. The eight additional connectors on the elongated expansion slots provide access to the extra pins of an 8086 chip.

Small plastic knockout panels must be gouged out with a sharp knife whenever any expansion boards are fitted to the Challenger, but otherwise system expansion is similar to that of the IBM PC and other compatibles. This procedure can leave ugly scars on the computer, and the Challenger is the only system I know of that forces you to do this.

Joining and separating the two Challenger boxes also involves fiddling about with plastic panels — in this case the ones along each side of the computer. I don't know of any other computer in this class with such a high plastic content — even considering the various Japanese models. I doubt if such a system would be legal in the US, where stringent RF shielding laws apply.

## SOFTWARE

Besides Advance 86 DOS (alias MS-DOS Version 2.11), the Challenger arrives bundled with the Perfect series of software (Perfect Writer, Perfect Speller, Perfect Filer and Perfect Calc). Users tend to take a very polarised attitude to this suite of programs — they either love it or hate it. These programs are adequate, and certainly better than

nothing at all, but as they have been comprehensively reviewed many times in the past, I shall leave it at that.

The Challenger (Advance) DOS is a fairly standard implementation of Microsoft's MS-DOS Version 2.11, but the master disk contained fewer DOS utilities than usual and no demonstration programs at all. Although the disk Basic was named BasicA, as on the IBM PC, it is really another version of Microsoft's GW-Basic. As with most compatibles, the Challenger totally hangs up when you attempt to run the real IBM PC BasicA; in fact the whole machine has to be switched off completely, as the keyboard reset is somehow disabled.

The IBM PC MODE utility is replaced with the SET40 and SET80 commands, which toggle between 40 and 80-column modes. The DISKCOMP utility is replaced by a program called FC, which is a lot more versatile. One would expect to see a few more spectacular demonstration programs appear in the future, as the Dick Smith technical staff become more familiar with the machine.

Among the various software packages claimed to run on the Challenger are WordStar, dBase II, Multiplan, Flight Simulator, and Lotus 1-2-3, which makes it very compatible. Programs that are known to experience difficulties on the Challenger, besides the true IBM PC Basic, include Microsoft Word, Database Manager II, Fastgraphs and Microsoft's Decathlon.

## DOCUMENTATION

The Challenger documentation is barely adequate. A small blue plastic 3-ring binder is supplied with each of the black boxes. The system unit manual describes the keyboard, memory, serial and parallel ports, and the built-in ROM Basic. The expansion unit manual goes on to explain DOS and the Perfect software series. Most pertinent areas are covered in the manuals, albeit briefly, but there is a lack of diagrams and good solid technical information. Bad documentation has

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**HARDWARE REPORT CARD**

Dick Smith  
Challenger

	Poor	Fair	Good	Excellent
<b>Setup</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Ease of Use</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Performance</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Documentation</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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### CPU:

Intel 8086 (4.77MHz).

### Memory:

128K RAM upgradable on board to 256K RAM.  
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### Disk drives:

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### Interfaces:

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### Keyboard:

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### Display:

25 lines by 80 characters mono.  
640 x 200 pixel color graphics.

### Operating system:

MS-DOS 2.11.

### Price:

\$995 system unit.  
\$1995 expansion unit.  
\$249 DSE mono monitor.

### Distributor:

Dick Smith Electronics  
PO Box 321, North Ryde 2113.  
Tel: (02) 888 3200.



come to be accepted in some of the cheaper Asian products on the market, but for a UK-manufactured machine being sold by a well-known Australian company, it is inexcusable.

The installation instructions are a bare minimum, compared to the normally high standards set by Dick Smith Electronics' multitude of construction kits and electronic appli-

well be all the documentation that they will ever require.


## SUPPORT

The Dick Smith Challenger is covered by the traditional 90 day warranty, and Dick Smith Electronics claims a servicing turnaround time of less than a week. There is also an optional extended warranty

choice. An external 10M-byte fixed disk has been promised, along with a 384K-byte memory expansion board, but there is no indication of anything ever being made available for those strange elongated expansion slots.

## THE FINAL WORD

If you are on a tight budget, but still desperately keen to get hold of a minimal 8086-based system, the Challenger system unit should be considered, because it is readily expandable should more funds become available at a later stage. (Astute marketing has priced the system unit below the psychological \$1000 barrier, but this does not take into account the cost of a monitor or cassette.) However, it becomes debatable whether the system unit alone could be deemed an IBM PC compatible at all, because it does not have the two main advantages of a compatible system: the ability to accept IBM PC expansion boards (no slots) and the ability to read IBM PC disks (no drives!).

On the other hand, if you intend buying a full-blown 16-bit expanded business computer with all the bells and whistles, take a very good look around at what else is available before making a decision. Some of the more recent Taiwanese IBM PC compatibles appearing in Australia offer all (or more) of the Challenger's attractive features, and challenge the Challenger on price. 

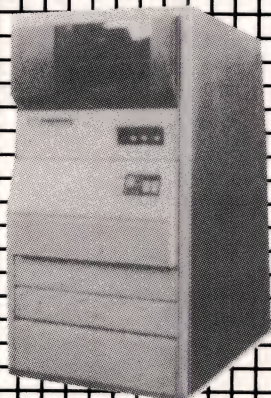
**Bad documentation has come to be accepted in some of the cheaper Asian products on the market, but for a UK-manufactured machine it is inexcusable.**

ances. A simple "How to Set Up" guide (even a single sheet) would be an improvement much appreciated by first-time users. The total lack of any system diagrams is in marked contrast to IBM's exhaustive and well-printed manuals.

Users contemplating doing anything adventurous with a Challenger, such as non-trivial programming will be forced to seek out supporting literature, which will no doubt be sold in all Dick Smith stores. However, for those users (and there may well be many) who intend their micro to spend most of its time running a single application program, such as a word processing or accounting package, this could

cover available at a cost of about 5 per cent of purchase price per year, or else a maintenance contract can be arranged through Hills Industries. In each case, the Challenger only needs to be taken as far as the nearest Dick Smith branch, and these are in abundance throughout the country.

Dick Smith Electronics already advertises a large range of software for the Challenger (and therefore suitable for most IBM PC compatibles) but not much expansion hardware. Two more slimline disk drives could be fitted into the expansion chassis, but if that much extra mass storage is required, a fixed disk unit may be a better



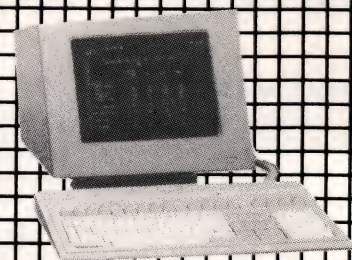
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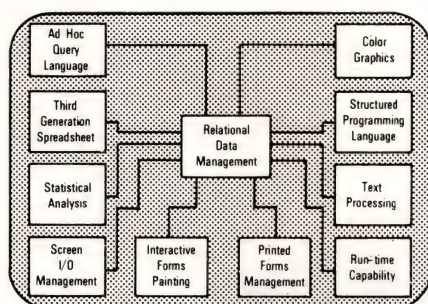
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Name of relation	: CITIES
Attribute name(s)	: CENSUS C
Sorted by attribute(s)	: CENSUS
Where (optional)	: CENSUS L

SELECT CENSUS CITY MORTGAGE L  
WHERE CENSUS LT 2000000 AND M

CENSUS CITY

# Cleaning Out the FILING CABINET

WELL down on the list of applications for which microcomputers are used is database management. Most micro owners manage to overcome the idiosyncrasies of word processing packages and spreadsheets, but only a minority seem to be able to come to grips with database management software.

The low emphasis users place on database management is surprising, as most mainframe applications fall in this area. This difference in emphasis seems due to the nature of microcomputing: it is the province of users who may be professionals in any area except computing.

While mainframe installations can afford to support a number of systems analysts and programmers who specialise in database applications development, the average microcomputer user either cannot afford the services of a professional in database management, or sees no

reason to bear this cost when to employ a single database management specialist for only three months costs more than the hardware.

The key point is that hiring a database professional to develop a microcomputer database management application is similar to inventing the wheel: it has already been done. The procedures for developing and programming a database management system are well documented. More important, a number of database software packages are available, making the development of a database management application relatively simple. It is only a matter of picking the right package.

It should go without saying that the long journey from raw data to a database management system should start with the first step — a pen-and-paper design. The importance of the design stage cannot be over-emphasised, as it not only

determines how the database application will develop, but what particular development package should be used. The range of features incorporated in various database management packages can cover virtually any application, but only if the appropriate package is matched to the correct application.

At the bottom of the hierarchy of database management packages are those which emulate simple card files. Caxton's Cardbox is the perfect computerised filing card system, suitable for any application that could be handled (but much more slowly) by a filing card index system. MicroPro's InfoStar goes several steps further in that it can easily handle more complex non-relational databases (and relational databases with more difficulty). Both packages represent a small range of software that is easy to learn and use. They give a good return on the time taken



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\$5,477.00	\$996.00

to use them to develop a database application.

In the middle range are the database management packages, designed to handle relational systems (dBase II and dBase III, for example). These usually include a database programming language to allow most complex applications to be developed, but only with a cost in learning time, if their interactive facilities are inadequate for the job. Developing a relational database is not simple and these packages reflect this difficulty. But they offer more power and flexibility than the lower-level management packages.

Further up the power (and difficulty) ladder are those development packages that are basically stripped-down mainframe development systems in either design or concept. Although they do not perform as well on microcomputers as their kin do on mainframes, they are effective

in handling just about any complex relational database structure. In fact, anything they cannot handle either interactively or online is a likely candidate for a mainframe anyway. But because these high-end packages incorporate powerful and versatile command languages, their real limits (which are distinct from the theoretical limits that no applications developer is ever likely to reach) are determined by the imagination and skill of the user.


Two recent developments extend the scope and usefulness of database software. Both are based on the desire of users for flexible management of data that has different forms in different contexts.

Integrated packages feature several applications modules that can share data, usually including spreadsheet, database, word processor, graphics and communications.

Idea processors are an attempt to design programs for the management of marginal ad hoc data usually expressed as short sequences of words. The data could, however, include drawings, tables, notes and structured texts.

Both applications are in an early stage of development as programmers try to build systems that are powerful, useful and appropriate to users' needs and extensions.

There is no such thing as a free lunch. It takes time to design even a simple database management application — and time to learn how to use even the simplest database management packages. But the long-term rewards more than compensate for the initial hard work and inevitable confusion.

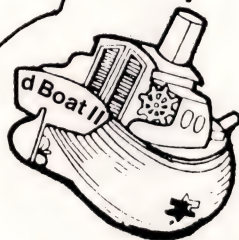
You do not have to think like a computer or like a programmer to use a database management system . . . You just have to think. 



Relational  
Database

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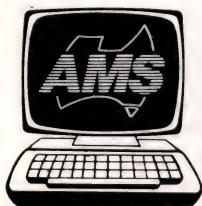


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**Idea processors are the latest attempt to extend the scope of data management programs. Rory O'Connor reports on programs that support the transformation of ideas into words.**

# PROCESSING IDEAS

THEIR makers say they could very well become the next "standard" application program found on every computer, alongside word processors, spreadsheets, graphics programs, and communications links. They are idea processors — in some circles, outline processors — programs that let users organise their thoughts and connect larger pieces of work to them. Some see idea processors as the ultimate writer's tool, combining concept and execution in a single product.

A year ago, only one such product, ThinkTank, was available for personal computers. It was produced by a California company, Living Videotext. Sales of that product were "minuscule" for the first three months, recalls company president Dave Winer. Now Winer's company employs 21 people in a large new office — and faces growing competition.

Ashton-Tate's recently announced integrated package, Framework, uses an idea processor as the heart of its operation. Also, Select Information Systems, a California word processor maker, has enhanced its writing tools with Freestyle, an idea processor that permits writers to continue to organise their material while writing the final product.

Winer and his competitors are convinced the idea processor will catch on and that many other companies will put competing offerings on the market.

"In April of 1983, there was a lot of dealer resistance to ThinkTank; they didn't want to carry a new product concept," Winer says. "We're past that point now. Our application has gained acceptance."

That it has. ThinkTank has made wholesale distributor Softsel's "hot list" of best-selling software; the firm has annual sales of about \$US4m now and is growing at 150 to 200 per cent in sales each month.

Idea processors are deceptively simple on the screen and difficult to describe on paper. Basically, the products allow users to create an outline very much like the one most students learn in high school. The difference is that, because of the computer's power to manipulate information quickly, the outline information can be entered randomly — in fact, it can be entered long before the author has any idea of what the outline will include.

As the information begins to pile up, it can be labelled, reorganised, and structured like an outline. Any piece of information can become a major category, and other pieces

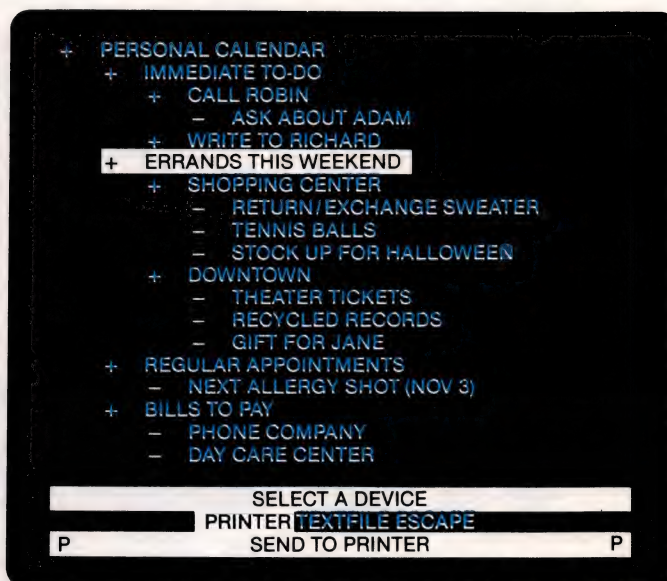
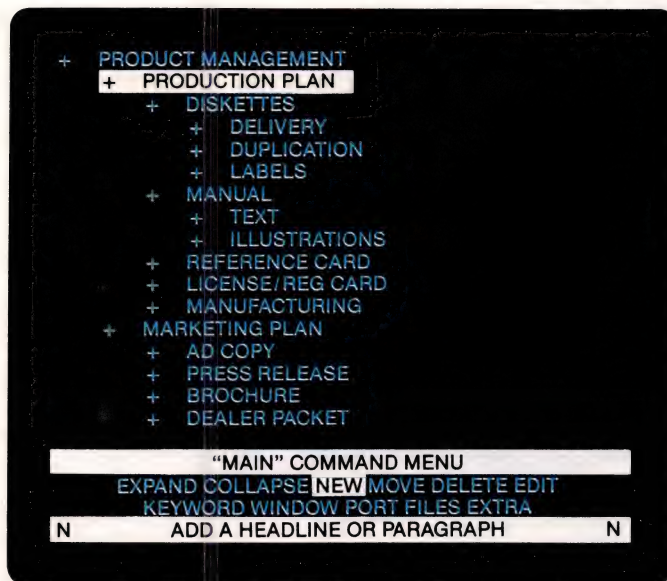
can be designated as subordinates, even though no such structure was determined when the information was first entered. The subordinate information is not limited to headings or short phrases: it can be longer text selections — or, in the case of Framework, spreadsheets, graphs, and even other outlines.

Because users can start the process by typing in virtually any idea and organising it later, some call them "brainstorm" processors. ThinkTank, for instance, is sold as a thought organiser, rather than as a writing tool.

The ability to reorganise large amounts of information quickly is the principal attraction of these products. Select's Freestyle, for example, allows users of the Select word processor to reorganise entire documents by changing the outline. If a writer decides to move Chapter 3 ahead of Chapter 2, all he or she has to do is pick the appropriate heading from the outline, specify its new location, and move it. All attached text then moves to the corresponding location in the document. Without Freestyle, the writer would have to use ordinary word processing commands to perform the operation.

Ashton-Tate believes the concept is the perfect solution for creating an





Adding material to a major section in ThinkTank (left) and printing a section (right).

overall structure for an integrated package with diverse parts.

"What people do with personal computers is involve them in business pursuits or college-level workstations," says Martin Mazner, vice-president of marketing for the company. "They work with a blend of textual, numeric, and some graphic information. Framework uses a new data construct, which treats this information as frames, each one knowing where every other one is. Outlining is a very natural way of expressing this underlying data structure."

Of the three products, only ThinkTank has been widely available. Freestyle and Framework are just hitting the shelves in the United States and are expected in Australia by September.

The original ThinkTank product, which has had only minor revision since its US release in April 1983, runs on the IBM, the Apple II family, and the Apple III computer. It costs from \$US150 for the Apple versions to \$US195 for an IBM copy. A version for the Macintosh has just been released in the US at a price of \$US145. With the Macintosh version, an owner can use either the mouse or the keyboard to create and manipulate an outline. What the Macintosh version sacrifices, because of its 128K-byte memory limit,

is the capability to store lengthy pieces of information in the outline. Users can, with the help of the machine's clipboard feature, move the outline to the MacWrite word processing program to add details.

(Winer has already had a chance to acid test the Macintosh version. At a recent trade show, he was asked to deliver a speech only two hours before the scheduled presentation. He used ThinkTank to create an outline for the speech, and transferred it to MacWrite, which he used to finish the speech. It was delivered on time, he says.)

Gary Cole, vice-president of product development for Select, says Freestyle has been in development for about seven months and was inspired by the idea of making writing templates easier to create. "We are using the outline as a tool to visualise a process," he says. Freestyle can create a document outline and copy part of another file — standard clauses in legal contracts, for example — into another document. "You can create a writing guide for management to consult."

The outlines produced by ThinkTank look much like the outline one would use to organise an English class essay or book report. The major points are aligned with the left margin of the screen, with subcategories indented. With the program,

Winer says, one can create up to 10,000 levels of subcategories.

Instead of numbering and lettering the main points and subcategories, though, ThinkTank uses plus and minus signs to let the user know which items have subordinate information attached. An entry preceded by a plus sign has other points under it. Phrases preceded by minus signs have no levels below them. When you move a category preceded by a plus sign, all information in that category follows.

Users can view the outline in various levels of detail, starting by looking at only the major categories. By "expanding" any category with a plus sign, the next level of information is displayed. In this accordion-like fashion, users can expose selected sections of the outline — or the whole thing — or close it again. Upon request, the program also sorts the subcategories (or main categories) alphabetically on the screen.

Freestyle looks different. To the right of each entry is a horizontal bar graph indicating the relative length of the text represented by the entry. The graph is logarithmic, and does not indicate an absolute length. When the user moves outline elements, the bar indicator and all the written material under that category move. The program, officially un-



veiled at a US trade convention in June, costs \$295. Freestyle runs on the IBM PC and compatible micro-computers.

Framework is expected to give the greatest boost to the commercial acceptance of idea processors. Ashton-Tate is spending millions to promote its latest product, and buyers seem certain to hear much about idea processing because of it. ThinkTank president Winer finds ironic pleasure in the situation.

"It's a very positive step for idea processors," Winer says. "Now, I'm not a big fan of integrated packages, of putting everything into a single package. And [Ashton-Tate's] idea processor isn't the best possible one, because it has to live in the same world with the other parts. But they have made a strong statement that one of the most important tools is idea processing." Ashton-Tate's Mazner says: "I would expect the success of Framework to spawn lookalikes. This industry has a long tradition of building upon proven ideas."

Some industry heavyweights, including the president of Lotus Development Corp, Mitch Kapor, see idea processors as only a harbinger of things to come.

"There's definitely something afoot here," says Kapor, "but I really think it's too soon to conclude that ideas editors are the next spreadsheet — that's very premature."

"What we're seeing is just the beginning. An ideas editor is a superimposition of a hierarchical retrieval structure on top of a flat document. But if you look at database technology, as opposed to word processing technology, you can see that there are several data structures used: trees, networks, and direct graphs. A tree structure is really the simplest, commonly used structure."


In time, Kapor says, buyers may be able to use products that manipulate information under the control of those other structures, which he says are more flexible than an idea processor. Kapor, though, is far from dismissing them out of hand. When Winer conceived ThinkTank in 1980, he was working

as an author for Personal Software, now VisiCorp, and Kapor was product manager for the project. The project was to be called VisiText, but was scrapped, Kapor says, because of the limited power of the Apple II at the time. Now, he says, a number of Lotus employees use ThinkTank, and he says an idea processor might someday become part of Symphony, Lotus' recently announced integrated product.

"One of the virtues of using an open architecture [is that] adding that kind of stuff is not terribly difficult," Kapor says.

Whether idea processors do become, as their makers hope, the next spreadsheet depends largely on how they are presented to buyers. Some people, including Gary Cole of Select, think that, in some form, the products are an inevitable step down the software path.

"I think this is a fundamental kind of innovation," Cole says. "It gives a higher level perspective on a problem. I'm not sure they are the sixth fundamental application, but they can be fundamental product enhancements. I don't think there is a generic idea processor."

Winer agrees that idea processors are in their infancy, and no one is really sure what form they will assume when mature. 

*Rory O'Connor is a senior editor with Infoworld.*

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**Neville Angove views DataFlex and discovers a database management package which is simple enough for a novice yet as powerful as any relational database on the market.**

# DATAFLEX—

## Simply Powerful

MOST database management packages seem to embody the old joke that ends with the line: "You can't get there from here — you'll have to start from somewhere else". For most database packages, the effective limitations of applications depend on the concepts around which the package was designed.

For example, dBase II is really only useful for handling one relational file at a time, although links between files can be simulated. Knowledgeman, on the other hand, is a subset of a mainframe hierarchical database applications generator based on mainframe data management concepts and file structures. Although it is powerful, it is also relatively difficult to use.

DataFlex, from Data Access, was designed from the outset as an applications development package with interactive functions as late additions. It seems to owe its design to a combination of the best features found on several competing packages and the ultimate aim of

handling simple but truly relational database applications.

The core of DataFlex is a language that contains more commands than most computer languages. The difference is that these commands relate solely to manipulating the elements of a database. The syntax of the language strongly resembles Cobol, with a dash of Pascal added for taste (since DataFlex is written in Pascal/MT+, the Pascal elements are not unexpected).

DataFlex commands are divided into several distinct groups, reflecting the designers' goals: console I/O commands for real-time by the operator, internal control commands, data entry and forms-handling commands, plus commands for multi-user control, reports, string handling, sequential I/O, structured control and operating system interaction.

These commands manipulate data variables, most of which are "windows" in a data entry or report form. In fact, the core of DataFlex is

the data-entry screen, and all data manipulations are done in this environment.

### FILE DESIGN

DataFlex's screen design procedure owes a lot to MicroPro's DataStar, with the data entry form being painted on to the screen using the cursor control keys. All text in the screen (except for the name of the form) is irrelevant to DataFlex, which is only concerned with any unbroken string of underlines, since these are the data windows.

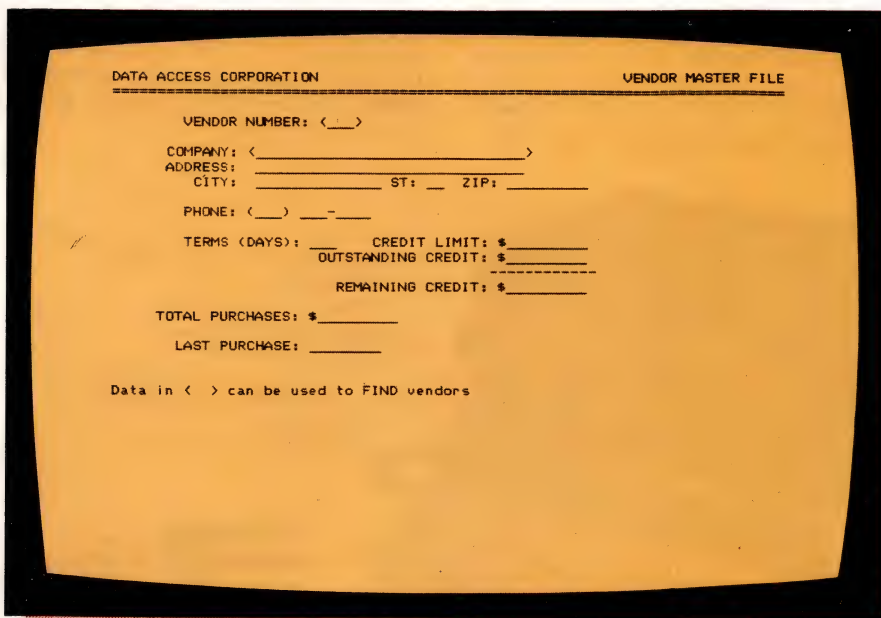
Once the entry screen has been created, using either DataFlex's own editor or a word processor, a menu-driven file definition utility is used to allocate field names and sizes, the position of the field in the record, the type of field, the links to other files, the size of the record (and file), and the size and composition of the indexes. The form width is not limited to the screen width, and the allowed length of a form is whatever





Left: DataFlex master menu which appears at sign-on.

Below: Screen image created using the DataFlex editor.



length it takes to accommodate 32,000 windows.

DataFlex only allows four types of data entry field: numeric, ASCII date and overlap. The first three are self-explanatory, while the last allows a number of contiguous fields to be treated as separate entities, with an effect similar to Cobol's multiple picture clauses.

The editing of fields is relatively primitive and is limited to simple formatting (although more complex editing can be done later using the command language). Screens can be broken into a number of pages, with field names being tied to their page and their position on the page. DataFlex allows up to 255 pages for a database configuration (broken up over a number of files).

The file definition utility creates two outputs. The first is a separate data definition file that is saved for use at the later compilation stage. It can be modified using the editor or a word processor before it is compiled. The second output is a copy of



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Now carry out some speed tests. On a standard benchmark test using BASIC routines\*, the timings are: PortaPak 12.9 seconds, IBM PC 16.4 seconds, NEC APC 19.7 seconds and Sirius 16.4 seconds. Using a standard dBASE II routine\*\*, the timings are: PortaPak 8 minutes 11 seconds, IBM PC 11m 52s, Sirius 17m 9s and NEC APC 19m 16s.

The expensive imports really cringe at this because they make so much of being "16-bit" machines. PortaPak is an 8-bit machine and proud of it. Not only is an 8-bit machine inherently better suited to jobs like word processing, accounting, spreadsheets, etc, but the 6MHz clock rate ensures it can run rings around the others even in complicated mathematical tasks.

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\*See Australian Personal Computer, Feb., 1984.  
\*\*See Australian Micro Computerworld, Nov., 1983.



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the screen, which is used to develop the file/data manipulation part of a DataFlex application.

DataFlex has generous limits to its databases. Fields can be up to 80 characters, with a maximum of 255 fields/record (or 4000 bytes/record). Files can contain up to 64,000 records, and up to 125 files can be opened simultaneously (excluding index files). Each file can have up to nine index files (four for 8-bit systems), with a key being comprised of up to six fields (four for 8-bit systems).

The DataFlex file is a random-access file, with index files linked through the record number (which acts as an additional key). The indexing allows true index sequential access. Each index is constructed as a B+ tree, which means that time needed to locate any element is effectively constant regardless of the size of the file. (Long key fields would, however, cause the process to slow because of the physical limitations in reading longer records).

## COMMAND USE

Once the data entry screen (and report screen) has been created and the files defined, the command language can be used to manipulate

```

/SCREEN
.....PERSONNEL FILE.....

LAST NAME : _____ FIRST: _____ MI: _____
ADDRESS1 : _____
ADDRESS2 : _____
CITY : _____ ST: _____ POSTCODE: _____
MEDICARE #: _____
DATE HIRED : ____/____/____
PAY RATE : _____
PAY TYPE : _ (H=Hourly or S=Salaried)

/*
OPEN PEOPLE
ENTER PEOPLE
AUTOPAGE SCREEN
ENTRY PEOPLE.FIELD_1
ENTRY PEOPLE.FIELD_2
ENTRY PEOPLE.FIELD_3
ENTRY PEOPLE.FIELD_4
ENTRY PEOPLE.FIELD_5
ENTRY PEOPLE.FIELD_6
ENTRY PEOPLE.FIELD_7
ENTRY PEOPLE.FIELD_8
ENTRY PEOPLE.FIELD_9
ENTRY PEOPLE.FIELD_10
ENTRY PEOPLE.FIELD_11
ENTRY PEOPLE.FIELD_12
RETURN
ENTEREND
ABORT
    
```

Screen image and data entry control code as created by AUTODEF.

the entered or retrieved data. The command language has several interesting features, including macros, repeat-to and while-do control structures, subroutines with labels, and a begin-end construct.

The language can also be used to construct extra DataFlex commands, either as command sequences controlled by a redefined

keyboard key, or as a macro or as a completely separate configuration. This adds a flexibility not seen in programming languages.

DataFlex command lines are appended to the end of the screen display (or report) code created when the file is defined, using the editor or a word processor. Using the DataFlex command language is



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CP/M 86 \_\_\_\_\_ MS DOS \_\_\_\_\_ PC DOS \_\_\_\_\_

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very much like programming in a high-level programming language.

## COMPILATION

The combination of screen (or report) display and command section must be compiled with reference to the file definition already created before they can be run. The process produces a semi-compiled code that runs more quickly, can be sold as a standalone module for a commercial application or can be transported to another computer system.

Compilation is a slow process. A simple application involving a single screen with no report and no data manipulation takes several minutes to compile. If a large file space is reserved — a requirement for the index files — the time for compilation can stretch into several hours

for a large application. A DataFlex application can be divided into several sub-applications, and each can be compiled separately, just as elements of a normal program can be sometimes compiled separately.

The compiled application is run as a command from within DataFlex. Several DataFlex utilities are compiled in DataFlex applications.

## OTHER FEATURES

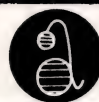
The latest release of DataFlex has other features that enhance its performance. It can convert dBase II files to its own format (and ZIP screens as well). It can handle multi-user applications, allowing field, record and file locking, and password protection. It also includes a utility used to design menus that can be incorporated into a DataFlex application.

Another feature is the ability to postpone the updating of the indexes. Normally, indexes are updated automatically, and this can delay processing in complex applications. DataFlex will allow the suppression of this updating until a re-index command is issued.

For novice users, DataFlex also includes two utilities that do away with most programming involved in creating simple applications that only use a single file.

## AUTODEF

Once the form has been created on-screen, the user can invoke the AUTODEF utility. It prompts the user to provide field names in the order in which fields appear on the screen. It also defines the file size, field types and prompts for key fields. The resulting code is similar



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to that which a user would write, except that it is completely self-contained with regards to the screen form created and is ready to compile.

AUTODEF cannot be used for applications involving multiple files, or where additional manipulation of the data is required. But it can be used to create the screen handling/data entry code and the file definition for later modification with the editor. Despite these limitations, AUTODEF is excellent for creating simple applications — simple in a relative sense only, as these can be quite complex by dBase II standards.

## QUERY

DataFlex also contains a utility that generates simple reports. The QUERY utility prompts the user on which fields should be included in the report, which fields are to be used for the data selection criteria and what key fields are to be used if the file has multiple keys. QUERY also asks where the report is to be sent. This can be to the screen, the printer, to disk, or to a report image file.

The report image file can be used as the basis of a customised report (similar to the files created by AUTODEF) or can determine the format of the output: as a columnar table, a sequential file with one field per line or as a sequential ASCII file similar to the format used by Basic.

## DOCUMENTATION

The latest version of DataFlex is supplied with a heavily revised manual which comprehensively discusses every system function and includes comprehensive examples. Beginners are led through the installation procedure, and file definition and compilation (using AUTODEF).

Although the manual contains a wealth of detail in its 200 or so A4 loose-leaf pages, it is — despite its revision — unsuitable for anyone who cannot afford the time for exhaustive experimentation. For example, the use of the editor is discussed only after the tutorial

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**SOFTWARE REPORT CARD**

**DATAFLEX  
(Vs 2.0E)**

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### System requirements:

Any major 8-bit or 16-bit operating system; 600K-bytes of disk storage, 52K RAM (8-bit), 100K RAM (16-bit).

**Price:** \$900 (8-bit), \$1200 (16-bit).

### Distributed by:

Intelligence (Aust) Pty Ltd  
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Sydney 2000.  
Tel: (02) 267 1711.

Archives Computers Australia  
163 Clarendon St  
Sth Melbourne 3205  
Tel: (03) 699 8377.

Australian Microcomputer Solutions  
248 Latrobe Tce,  
Geelong, Vic 3320.  
Tel: (052) 21 1085.

section in which the use of the editor is assumed. Even then, the editor's documentation is sparse and incomplete enough to force most users to a word processor for creating screen images or writing DataFlex code.

While the DataFlex commands are discussed in detail, with a number of examples, there is insufficient explanation of how the commands can be used in concert to create complex

applications. It is a big step from AUTODEF to using FILEDEF and commands, and the new user will stumble badly taking this step.

There is no doubt that a new user could write applications in DataFlex much faster than with any comparable development system, but the manual's design makes this process much more difficult than it should be. It is no small wonder that the three Australian distributors offer training classes in its use.


While DataFlex is not unique in having problems with its documentation it would still benefit from another revision.

## CONCLUSION

DataFlex is a powerful database applications development tool, well suited for beginners and advanced users. Although simple applications can be developed in only a few hours, the package incorporates sufficient power to equal the performance of any other system used to develop relational database applications.

The ability of DataFlex to be used to create user-defined utilities which, in turn, can be used in the development of applications is a major plus, along with its flexibility and relative ease of use. Its features, facilities and power put it well ahead of comparable packages, especially in the development of menu-driven applications.

DataFlex is especially suitable for use by contract programmers or independent software houses needing to develop one-off database management applications. Its use of a compiler guarantees the security of the source code and reduces the cost to the final user because only a run-time package has to be bought to run a compiled application.

The ability to use DataFlex to create user-defined utilities means that a programmer can quickly write the programming tools that can be used in a variety of applications, and together with the automatic file definition and report definition utilities allows the contract programmer to produce the bulk of the required code quickly. 



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- \* Printed Forms Management. Complete control over printed output is provided. Reprinted forms can be specified, disk output can be directed to the printer, text and tiles can be defined anywhere on a form.

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KnowledgeMan software is oriented towards a wide spectrum of users. At one end are those with relatively little computer expertise. The simplest forms of KnowledgeMan commands can be used to carry out basic processing tasks. Typically, these are spreadsheet analysis, data retrieval and statistical analysis of selected data.

At the other end are application systems developers, who use the most advanced KnowledgeMan facilities to build application systems. Typically, the KnowledgeMan programming language capabilities might be used to build a customized accounting or personal management application.

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**Some database management applications need only a middleweight package that is easy to use. R:base 4000 has both features, according to Burton Alperson.**

# DATA MANAGEMENT with ELEGANCE

R:BASE 4000 is the middle member of a family of database management programs from Microrim. R:base 2000 is a stripped-down, low-cost version of R:base 4000, and R:base 6000 is the 4000-level program modified for a multi-user environment. Except for the multi-user capability, the 4000- and 6000-level programs have similar capacities and features.

R:base is a fully relational database management system (DBMS) with the ability to sort and select records conditionally and unconditionally. Like many other DBMSs, it can perform intersection, union, subtraction, projection, and joining operations in the creation of new relations.

The program requires 256K-bytes of memory, and performance does not improve with more memory. However, optional modules sold at extra cost may be able to take advantage of more memory. Microrim currently sells the Extended Report Writer, and two other modules — a Fortran/Pascal programming interface and a natural-language user interface called CLIO — are promised in the near future. None of the modules was tested for this review.

R:base supports any printer cap-

able of reproducing uppercase and lowercase ASCII text. It provides no special control of printers that use setup codes for fonts, sizes, and other printing characteristics. Although a color monitor may be used with R:base, no special provision is made for controlling color in the program.

### USER INTERFACE

R:base's user interface is flexible enough to suit both experts and novices. If you are an experienced user, you can type in commands in the correct syntax, then sit back and watch the program run through its paces. If you are still unfamiliar with the syntax, you can type PROMPT to send the program into a fully prompted mode. An appropriate help screen appears, and the program prompts you for information. All you do is fill in the blanks. Thus, R:base gives you the best of both worlds: command and menu operation in a single program.

On the other hand, programmability — one of the most important features of the heavyweight DBMSs — is almost absent in R:base. Only a crude provision to sequence non-interactive commands in "command files" is provided. It is impossible to

develop turnkey systems and other customised applications because R:base contains neither a programming language nor a macro capability. The future addition of a Fortran/Pascal programming interface should allow some programmability for professional programmers, but the lack of a Basic interface or an internal language capability leaves most of us out in the cold.

This is a puzzling omission. Most of Microrim's advertising invites users to compare R:base with programs like dBase II and KnowledgeMan, which leads you to believe that it is similar in scope and capacity to these programs. It is not. Lack of programmability places R:base in a weaker class.

### COMMUNICATION

R:base's ability to send and receive files to and from other programs is weak but comparable to most other data management software. ASCII input and output is available for both serial string and two-dimensional formats. Automatic routines are available for Multiplan SYLK files and for other Microrim products. Although communication is claimed for DIF files, it involves a manual procedure that requires you to



understand the jargon of DIF files before you can convert data.

R:base's searching and sorting capabilities mix power and flexibility, but there are disappointing omissions. The program is unusually rich in available data types. Appropriate data handling is provided for date, dollar, integer, real (floating-point), text (string), and time variables. However, only 10 search or sort criteria may be used simultaneously, and the only available operators are AND or OR. (With the addition of the Extended Report Writer you can also use IF ... THEN ... ELSE.) To provide a point of reference, Knowledgeman provides AND, OR, XOR, NOT, IF ... THEN, IF ... THEN ... ELSE, and CASE. In addition, the number of simultaneous search and sort criteria in Knowledgeman is unlimited.

Indexing (called "keying" in R:base terminology) is powerful and easy to invoke. While some other data management programs restrict the use of keyed variables to one or two commands, R:base's keying can be used to improve performance in a broad range of enquiry functions, including INTERSECT, SUBTRACT, UNION, and WHERE.

Ad hoc query functions are beautifully implemented in R:base. The enquiry command structure is similar to IBM's SQL/DS (Structured Query Language/Data System). The major enquiry command is SELECT. Like most of R:base's command set, it is easy to use, intuitively appealing, and moderately powerful. The syntax for SELECT operates as follows:

```
SELECT attnames FROM relation
{SORTED BY attnames {=A or =D}
WHERE conditions}
```

"SELECT attnames FROM relation" is the only required part of the syntax. It describes the list of fields you want to see and the name of the table that contains the data. "SORTED by attnames = A or = D" defines the sorting order and whether it should be ascending or descending for each sorting variable. "WHERE conditions" defines the conditions for inclusion or exclusion of records in the report.

Attributes				
Name	Type	Length	Relation Key	Comment
ADDAY	INTEGER	1 value(s)	MAIN	Admissions day
ADMCODE	INTEGER	1 value(s)	MAIN	Program code
ADMTH	INTEGER	1 value(s)	MAIN	Admissions month
ADYEAR	INTEGER	1 value(s)	MAIN	Admissions year
ATTADD1	TEXT	30 characters	MAIN	Attorney's address
ATTADD2	TEXT	30 characters	MAIN	Attorney's address
ATTADD3	TEXT	30 characters	MAIN	Attorney's address
ATTADD4	TEXT	30 characters	MAIN	Attorney's address
ATTPHONE	TEXT	19 characters	MAIN	Attorney's phone
DIDAY	INTEGER	1 value(s)	MAIN	Day of discharge
DIMTH	INTEGER	1 value(s)	MAIN	Month of discharge
DIYEAR	INTEGER	1 value(s)	MAIN	Year of discharge
LNSTAT	INTEGER	1 value(s)	MAIN	Payment lien status
MDADD1	TEXT	30 characters	MAIN	Physician's address
MDADD2	TEXT	30 characters	MAIN	Physician's address
MDADD3	TEXT	30 characters	MAIN	Physician's address
MDADD4	TEXT	30 characters	MAIN	Physician's address
MDPHONE	TEXT	19 characters	MAIN	Physician's phone
PAYSRC	INTEGER	1 value(s)	MAIN	Payment source code
PTID	TEXT	9 characters	MAIN	Patient ID number
REFATT	TEXT	30 characters	MAIN	Referring attorney name
REFCODE	INTEGER	1 value(s)	MAIN	Source of referral
REFDAY	INTEGER	1 value(s)	MAIN	Day of referral
REFMD	TEXT	30 characters	MAIN	Referring physician name
REFMTH	INTEGER	1 value(s)	MAIN	Month of referral
REFSRC	INTEGER	1 value(s)	MAIN	Referral source code
REFYEAR	INTEGER	1 value(s)	MAIN	Year of referral
SLFINS	TEXT	1 characters	MAIN	Self insured?
WCAUTH	TEXT	1 characters	MAIN	Work comp authorized?
WCCO	TEXT	30 characters	MAIN	Work comp company
WCCOOF	TEXT	30 characters	MAIN	Work comp office
WCPHONE	TEXT	19 characters	MAIN	Work comp phone
WCREP	TEXT	30 characters	MAIN	Work comp rep name

Figure 1.

R:base's report capacities are disappointing. Although field placement is flexible, report width is limited to 132 columns, and control breaks are impossible. Most important, no more than 10 variables can be created for a report. These limitations severely constrain applications programmers. Adding the Extended Report Writer reduces some of these limitations. The extra module reduces the restriction on the number of variables, increases the page width of reports, allows the insertion of control breaks, and provides expanded formatting capabilities.

The maximum record length for R:base is 1530 characters. The maximum number of fields per record is 400, and the maximum field length is 1500 characters. Microrim's claim of a billion-record capacity for R:base is amusing. Using their estimation formula on a small 33-field database, a mere million records would require a 768M-byte hard disk for data storage alone. A

billion records would require a thousand times more hard disk. It would be nice to believe that this capacity will be available before R:base is obsolete.

## PERFORMANCE TEST

In order to test some of R:base's features, I imported a small hospital information system that I had originally developed as a Lotus 1-2-3 template system. The process illustrates some of the problems involved when a program does not provide a direct transfer capability.

It was necessary to reformat the spreadsheet by inserting new columns containing quotes and commas (",") between each of the original columns. This step was required because some of the original fields contained embedded commas that could disrupt the transfer process. After reformatting, the spreadsheet was "printed" to an ASCII.PRN file by Lotus 1-2-3.

Although R:base is supposed to



read two-dimensional ASCII files, incoming records can be no longer than 80 characters. Consequently I had to write a Basic program that could read the PRN file and reformat it into the serial string format expected by R:base.

After running the Basic program, the data were imported into R:base with a LOAD command. The process was tedious; a considerable amount of time could have been saved if R:base contained a direct importing routine for Lotus 1-2-3 WKS files. In fairness it should be pointed out that few other data management programs have this capacity.

Microrim deserves high praise for providing formulas for estimating file size. Few microcomputer DBMSs contain this critical information. The estimated file size for this database turned out to be quite close to the actual size. The estimated file size for data storage was 322,560 bytes, while actual file size was 325,632 bytes.

The sample database I used is a 33-field, 420-record information system. Figure 1 shows R:base's description of the database produced by the LISTATT (list attributes) command. Except for the column labelled "Comment," which I added, Figure 1 is the actual file output from R:base. It was necessary only to type OUTPUT "ATTR.DOC" to instruct R:base to produce a file rather than screen output. The file was then easily imported to a word processing program.

I confined speed testing to the ad hoc enquiry functions and tried to restrict the scope of testing to tasks similar to those that were actually required of this database. An additional consideration was sorting performance. I wanted to see how much performance was degraded by increasing the number of sort criteria and making the conditions imposed on the search requests more complex. All tests were performed on a 640K-byte IBM PC with an expansion chassis and a hard disk.

The first test involved using the Select command to produce a report consisting of referring physicians,

referring attorneys, workers' compensation representatives, payment sources, referral sources; and program admissions codes, all ordered alphabetically by referring physician. The required syntax was:

```
SELECT REFMD REFATT WCREP PAYSRC  
REFSRC ADMCODE FROM MAIN SORTED BY  
REFMD = A.
```

This command took 48 seconds to process (the time between pressing <Enter> and the appearance of the first line of the report on the screen). When an additional sorting criterion was imposed (sorting by REFATT), processing time increased to 71 secs. Adding a third sorting condition (WCREP) increased the time to 95 seconds.

All of the previous tasks involved string sorting criteria. A second series of tests involved the same report as above, this time sorted by the numerical variables of PAYSRC, REFSRC, and ADMCODE. The report was produced with one sorting criterion in 15 seconds. Two criteria required 20 seconds, and three criteria required 22 seconds. R:base is apparently more efficient at sorting integers than strings. When possible you should use numerical sorting fields to increase speed with R:base.

Performance was substantially improved when conditional statements were included with a WHERE statement. This was surprising since the use of conditionals degrades the performance of some other data management software.

When the clause WHERE ADYEAR EQ 82 was added to the syntax just used (restricting the report to 1982 admissions), processing time dropped from 48 seconds to 16 seconds for the one-string criterion task. For the two- and three-string criteria tasks, processing times changed from 71 seconds to 32 seconds and from 95 seconds to 40 seconds. Processing times for all the numerical sorting tasks were constant at about 13 to 14 seconds.


Increasing the complexity of the conditional clause to WHERE ADDAY GE 1 AND ADMTH GE 1 AND ADYEAR GE 82 AND ADYEAR LT 83 had little impact on

performance. The times were all within a second or two of the simpler conditional statement. In all cases, the program performed flawlessly and exactly as specified in the manual.

R:base is fast for a microcomputer DBMS. While it is considerably slower than Lotus 1-2-3, it is faster than most other data management programs.

R:base is an outstanding choice for a small business that doesn't need to develop turnkey systems or complex reports. Its superb engineering and documentation put it head and shoulders above much of its competition.

However, R:base doesn't come close to being the replacement for powerful data management software such as dBase II and KnowledgeMan. Applications programmers will find themselves severely limited by the absence of programming capability and macros, by limited communications capability, by an impoverished selection of logical operators, by the limitations of 10 variables per report and 132 columns per page, and by the inability to group data with control breaks.

Although some of these limitations may be overcome by adding modules at extra cost, many of the functions found in the modules deserve to be included in the original product. Microrim says that it is working on programming enhancements for the product. If the company can produce these enhancements with the same elegance that exists in its current product, R:base may become a formidable heavyweight contender. As it stands, the program is a champion among middleweights. 

Burton L. Alperson, Ph.D., is a contributing editor for PC World.

#### **R:BASE 4000**

System requirements:

256K, two disk drives.

Price: \$630.

Available from:

**Imaging**

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# GrafTalk

**GrafTalk** is a complete GRAPHICS subsystem. It comprises a full-screen spreadsheet-like editor, a dual screen command editor and simple command generation of pie charts, bar charts and X-Y plots. GrafTalk is both fully menu-driven and fully programmable. It is a standard in the micro-computer world which can accept data from all popular spread-sheets and database system reports.

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## Screens

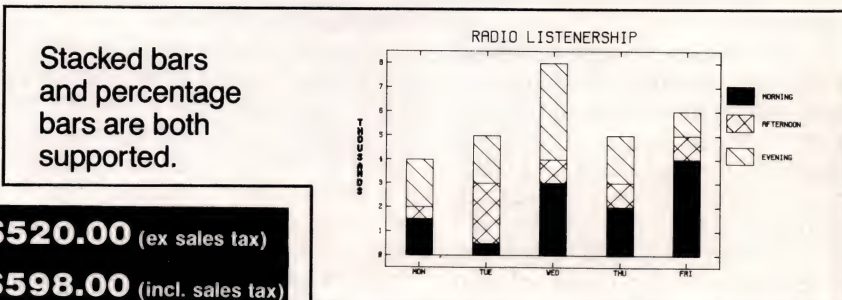
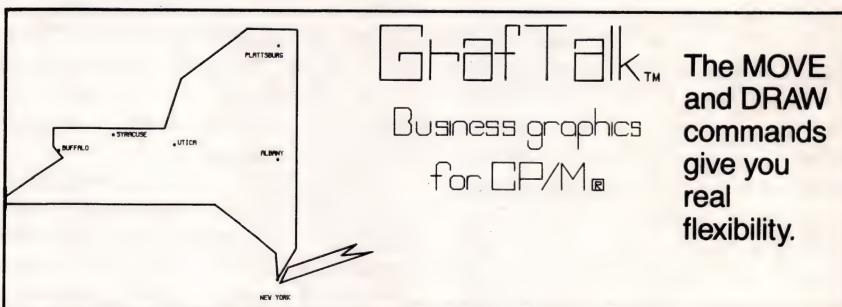
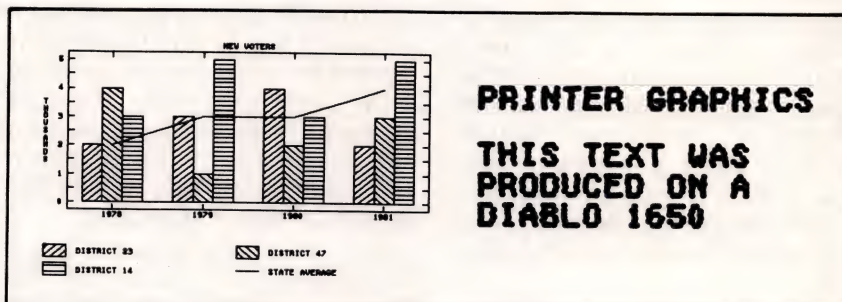
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- Mannesman Tally PIXY3 plotter
- AMDEK Amplot II plotter

## Printers

- Diablo 1640, 1650, 630 (as direct plotting device)
- NEC Spinwriter 5510, 5520 (as direct device)
- Anadex 9501 (as dump device)
- Diablo 1640, 1650, 630
- NEC Spinwriter 5510, 5520
- Paper Tiger IDS-460
- Epson MX80, MX100, FX100
- Okidata 82A, 83A, 84 (also known as Microline, ICL . . .)
- Okidata 84
- Okidata 92, 93
- C.Itoh Prowriters, 8510 and 1550
- DEC LA50 printer



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**As microcomputers become more powerful, they are beginning to take advantage of the sophisticated programs written for mainframes.**

**Marc Stern looks at Knowledgeman, a relational database which takes advantage of IBM's Structured Query Language.**

# KNOWLEDGEMAN

## Mainframe Power for the Micro

As 16-bit microprocessors become more prevalent, we are beginning to see personal computers that are complex enough to make use of software developed originally for mainframes. Knowledgeman is a product that brings the IBM Structured Query Language, or SQL, a relational database language, to the IBM Personal Computer.

Knowledgeman is more powerful than most commonly used database programs, such as dBase II. Not only does it allow you to set up a relational database, but it also lets you perform spreadsheet functions with its built-in spreadsheet. You can use the spreadsheet to add more complex analytical tools to your analyses of the database.

Knowledgeman clearly isn't ideal for beginners. It is much easier to work with if you either have a working knowledge of a programming language or a database system that also is a programming language, such as dBase. Knowledgeman is also a developmental language, if you choose to use it as such.

Feature for feature, Knowledgeman shows the power of its mainframe design. You can have up to 255 fields per record; each one of them can have up to 65,535 characters, depending on your machine's memory and storage capacity. It can handle numerical, character and logical fields and provides 14-point numeric accuracy, as opposed to 10-point accuracy with dBase. Knowledgeman can convert your alphabetic entries from lowercase to

uppercase or vice versa and can check entries to ensure that they conform to your choice of digit, alphabetic or alphanumeric types.

You have an unlimited number of files available for use at any time, making the program more useful for handling large quantities of information than dBase is.

You can sort information in reports with secondary keys, in ascending or descending order (or a mixture of both), and set up and

Records per table.....	65,535
Characters per record.....	65,535
Fields per record .....	255
Characters per field.....	65,535
Tables open at once .....	unlimited
Index keys per table .....	unlimited
Fields per index key .....	65,535
Index key length (characters) .....	65,535
Working variables .....	unlimited
Rows and columns per spreadsheet .....	255 x 255

**The limits of Knowledgeman.**



index using a so-called B-tree arrangement. This makes possible more highly refined and detailed data manipulation than is possible with the usual microcomputer databases.

Security with such large amounts of information is important, so

Knowledgeman has an effective built-in password protection system. You must use a special password to open the program, and you can encrypt your data while using any of 65,535 combinations of protection codes. When properly used, these codes will ensure that your data will

remain secure, even if you are sharing a computer.

Knowledgeman gives you a wide range of alternatives for manipulating both numeric and alphabetic data. You can take a square root, produce a random number, calculate exponents, logarithms and several trigonometric functions. You can also operate on parts of alphanumeric fields. You can use any of these functions to create a temporary field, to produce screens or printed reports and to perform statistical or spreadsheet calculations.

All the commands you need to use are simple English words. You simply type the appropriate command when prompted by the program. For instance, Define allows you to set up a new file, Redefine allows you to change an existing file, Rename allows you to rename a file, Impress allows you to define a new table by impressing it with the definition of an existing file, and Destroy destroys a table.

Knowledgeman is a powerful tool

STEPS -----	COMMENTS -----
DEFINE CONSULT	start the process
FILE? "B:CONSULT.ITB"	name the file to store data base
FIELD? EXPERTIS STR 60	a field for their area of expertise
FIELD? OTHER STR 60	field for other areas of their interest
FIELD? LASTNAME STR 17 USING "aaaaaaaaaaaaaaaa"	make sure last name is just alphabetic
FIELD? FIRST STR 15 USING "aaaaaaaaaaaaaaaa"	
FIELD? COMPANY STR 40	
FIELD? STREET STR 40	
FIELD? CITY STR 15	
FIELD? STATE STR 5	
FIELD? POSTCODE NUM 4 USING "dddd"	make sure postcode is number
FIELD? PHONE NUM 7 USING "ddd-dddd"	use picture for phone number
FIELD? RATE NUM 5 USING "\$ddd.dd"	use dollar picture
FIELD? COMMENT STR 60	
FIELD? <ENTER>	to end press ENTER

Setting up a computer consultant database.

CONSULTANT DATA BASE

AREAS OF EXPERTISE: \_\_\_\_\_

OTHER AREA : \_\_\_\_\_

LAST NAME: \_\_\_\_\_ FIRST: \_\_\_\_\_

COMPANY: \_\_\_\_\_

STREET: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ POSTCODE: \_\_\_\_\_

TELEPHONE NO: \_\_\_\_-\_\_\_\_

RATE(PER HOUR): \$\_\_\_\_.\_\_\_\_

COMMENTS: \_\_\_\_\_

TO BEGIN <ENTER>      TO PROCEED DOWN FIELDS <ENTER>      TO CANCEL <ESC>

Screen design for consultant database.



Enter H008 on Enquiry Card





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**John Bryant looks at Caxton's Cardbox . . . the perfect computerised file-card system.**

# SHUFFLING the DECK

CARDBOX, developed by Caxton Software Publishing Co, of London, is a database management program that simulates a stack of index cards. In fact, using standard keyboard characters, the program provides for optional graphics representation of an index card, or any other format the user designs.

You can do just about anything that you can do with a stack of index cards better with Cardbox. But, unlike some other database managers, Cardbox has no mathematical abilities.

## FEATURES

Cardbox runs under CP/M-80 (Version 2 or later), MP/M-80, or PC-DOS, and needs at least 48K-bytes of RAM and 100K-bytes of disk storage. You can use the program with only one drive, but two drives are preferable if you want to avoid changing disks frequently.

Cardbox also requires a video terminal with a 24-line by 80-column display and an addressable cursor. When you move from feature to feature within Cardbox or move from the display of one record to the next, Cardbox rewrites only the portions of the display that change, eliminating scrolling.

You have to customise the program to the appropriate commands of your terminal, which you can accomplish easily by running one of two configuration programs. With TERMDEF, you need only identify

your terminal from a list and provide a few details, such as the baud rate for which the terminal is set. TERMGEN customises the program for terminals that aren't in the TERMDEF listing.

TERMGEN has a longer and more complicated list of questions than TERMDEF, but, nonetheless, I was able to configure the program for my terminal using TERMGEN in about 20 minutes, counting the time it took to locate necessary information in the manual.

Cardbox is a characteristic database management program, in that it allows the creation of user-defined sets of information (the database) composed of records (the data pertaining to one item in the database), which in turn are composed of fields (various attributes of each item).

Thus, for example, a database for recording household possessions would have one record for each item, and each record would be subdivided into fields such as the name of the item, date of purchase, purchase price, serial number and so forth.

Cardbox lets you create records containing up to 1404 characters each, and as many as 26 fields. It imposes no limit on the number of words that you can index, or on word length (although it bases indexes of long words on the first 64 characters). The maximum number of records per file is 65,500 (assuming you have that much disk space), and

maximum file size (under CP/M) is 8M-bytes.

The interesting thing about Cardbox, in contrast to many other database managers, is the display. When you're setting up the format for each record in a particular database, Cardbox enables you to draw a form on the screen, complete with headings for each field. As you enter data, it goes into the form. The cursor automatically moves to the beginning of the next field when you terminate a field with a carriage return.

Likewise, when data from the database is displayed, it appears in the graphics form you have defined. Only one record can appear on the screen at a time.

You can have the same data displayed in various formats by using multiple-format files. You don't have to use data from a data file when changing formats. Thus, for example, the program can display or print a database consisting of names, addresses and telephone numbers in a format that ignores the telephone number, as would be desired in printing a mailing list.

Cardbox offers print format separate from the screen-display format, so you can set a name-and-address file to space appropriately for printing labels or continuous-form envelopes, for example.

In setting up the format for a particular database, you can select the mode of indexing for each field within each record. Cardbox offers



four options: no indexing, indexing all words within the specified field, negative-option indexing (indexes the word unless you indicate otherwise) and positive-option indexing (indexes only the words you specify).

As there is no specified limit on the number of words the program can index, and since searches through the database use the indexed words, it pays to be generous in indexing. A special command can order a search of the entire text of a field or record, though, rather than just the indexed words, so it is possible to find unindexed information.

## PERFORMANCE

A good database manager must be useful for searching and sorting, and Cardbox rates well in this area. It has a full complement of search and sort commands that let you search the whole record or only specified fields. Negative searches are also possible, so you can, for example, list all Victoria entries in the database, but exclude Melbourne. "Wild card" characters are provided for search purposes.

Searching occurs in levels or stages. You apply search criteria at each level, and the program sifts the entries in the database so that at the given level only the records that meet the combined criteria for all previous searches remain. But in moving from one search level to the next, you don't necessarily have to pare down the selected entries. Cardbox has an Include command that adds records that meet the criteria you specify to the currently selected records.

The video display indicates the numeric level of the search (the number of successive search criteria applied), as well as the number of records that meet the combined search criteria.

Cardbox reads data from and writes it to disk during parts of the search process, so you can experience delays, particularly on a large

file. But because Cardbox is disk-interactive, it can handle databases larger than the computer's memory.

Once the program has selected the appropriate items from the database, you can read through them on the screen using commands to move forward or backward one record, or to move to the beginning or end of the selected records. You can also have them printed, using parameters you previously specified in the format file, or they can be written to a separate disk file. When the program writes to a separate disk file, you have the option of several formats, so you can create a file that other programs can read.

## EASE OF USE

Cardbox's designers seem to have put a lot of thought and effort into making it easy to use. The program is, for the most part, menu-driven, and at every point in the program the screen contains a full listing of options and commands currently available.

But the program does have a few inconveniences. It appears to be impossible to list a disk's directory without dropping out of Cardbox and into the operating system; somewhat annoying when you cannot remember the exact name you gave a particular file you want to access and therefore need to look at the directory. Another drawback is that you cannot delete a Cardbox data file or format file from within Cardbox. You have to resort to the operating system's erase command, which means you must reload Cardbox after the deletion.

## ERROR HANDLING

Cardbox uses error-handling facilities well. Generally, operator errors do not cause a system crash, but instead bring about the display of an error message. The manual devotes several pages to error messages and their meanings.

Cardbox writes to files even when

you're using it only to retrieve data. If you don't follow proper exit procedures, or if there is a disk failure or power failure, data corruption can result.

Consequently, Cardbox has a utility program that can often repair corrupted files. If the utility can't repair a file, it dumps whatever is still readable so that you can reconstitute the file.


## DOCUMENTATION

One of the nicest things about Cardbox is its documentation, which consists of two spiral-bound manuals typeset on high-quality paper. One manual is a 28-page Starter Manual, which is a tutorial on the use of Cardbox.

The second manual is a 76-page, well-indexed reference manual that explains Cardbox and its features in greater detail than the starter manual. Both manuals provide ample illustrations.

## SUMMARY

Cardbox is an excellent database manager for use where mathematical and relational facilities (summing fields, greater-than, less-than or equal-to comparison) are unnecessary. Because it lacks those features, its usefulness for inventory control, tracking a stock portfolio or similar applications may be limited.

Nonetheless, its versatility in other aspects and its ease of use make it a useful program for home or business. 

---

## CARDBOX

*System requirements:*  
CP/M-80 or MP/M-80, PC-DOS  
48K RAM  
single disk drive  
Price: \$328

*Available from:*  
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Tel: (02) 212 1411.



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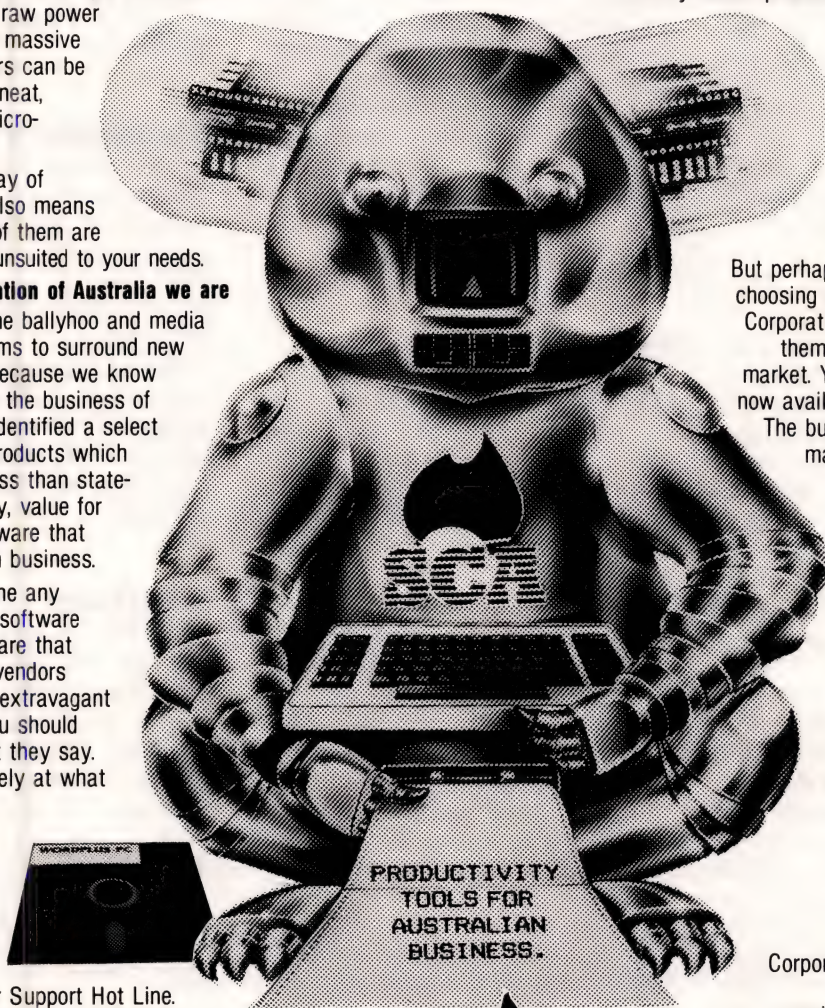
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**A beta test version of the new dBase III shows Ashton-Tate didn't leave much off the wish list of dBase II fanatics. Mark Ginsburg has a quick climb in the menu tree.**

# dBase Goes One Better

ASHTON-Tate has finally released dBase III. dBase II was one of the first database management systems for eight-bit microcomputers, and is certainly the most successful. For a long time, however, many of us have been waiting for a true 16-bit version. Over the past six months there have been rumors of Version 2.6 (dBase II) which would overcome the limitations encountered with earlier versions. Instead, a new product has been released, dBase III, completely rewritten in the C language.

Ashton-Tate managed to remain silent about the new product right up until a few weeks before its release. Perhaps this is a sign of a well organised company with a solid product and marketing approach. Even with its shortcomings dBase II still expands its user base. Many competitors have released database management systems (DBMS), some superior to dBase II and targeted at dBase II users. Has Ashton-Tate been too slow?

The version reviewed was a beta test one, not indicative of the final

presentation of the product. The manual was a red unmarked binder without separators, and several pages were left blank for artwork. The actual contents of the manual are very well presented; a lot simpler to follow than the dBase II manual. Installation was straightforward, except for having to create a Config. Sys file with 20 files and 24 buffers to enable utilisation of the advanced file handling capabilities.

### **COPY PROTECTED**

Ashton-Tate has copy-protected the dBase III master disk with a software protection system called Prolok, and although this does not prevent the disk from being copied, copies of a Prolok-protected disk are useless unless the original is in one of the floppy drives. For hard disk systems, to start dBase III you must have the master disk in drive A. Once the system is running, you may remove the master disk. The weak link in this system is the Prolok disk. If the Prolok security signature is damaged the user will

have to rely on the manufacturer to supply a replacement.

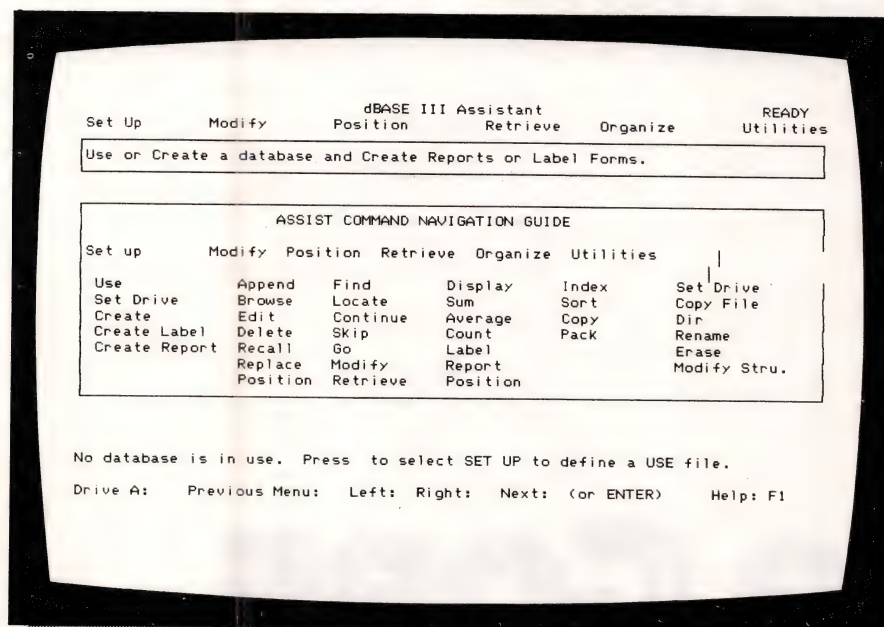
All the programs except the utilities reside on the master disk. The utilities on an additional disk include dFormat, a custom screen generator, dConvert, a utility that will assist in converting existing dBase II programs to dBase III format, and some sample programs.

### **ASSISTANCE**

One of the most significant enhancements from a beginner's point of view is the ASSIST command. Execution of this command puts the program in a menu-driven mode which lets the user select commands and operations from a system of tree-like menus (similar in concept to Lotus 1-2-3 or Multiplan). These selections include: creating a database; using an existing database; performing standard file operations and selecting processing parameters.

The BROWSE command is much faster and makes use of many more keyboard functions. A record can





Master help screen, listing commands for which additional help information is available.

even be appended to a database in the browse mode.

There are many improvements in the file handling area. A file may contain up to 1000 million records; a record up to 128 fields. There are now two additional types of fields: date fields and memo fields.

The data in a memo field is stored in a separate file (with a .DBT extension). The memo file is specifically used for storing comments for each record, or selected records, of a database file. A .DBT file may store up to 512K-bytes.

When appending a record in the interactive mode, <Ctrl> <PgDn> zooms into the memo field where text entry can take place with full screen functions. <Ctrl> <PgUp> returns to the append screen.

The CREATE command has improved screen handling, and MODIFY STRUCTURE no longer demands that you copy data to an external file.

Both sorting and indexing are faster.

Report generation is much the same as in dBase II, but includes full screen editing of the report parameters. The MODIFY REPORT (filename) command enables the user to easily edit the format of an existing report.

Ashton-Tate has recognised the demand for easy production of mailing labels and has provided a sophisticated label-printing application. The user specifies the data to be printed in the labels and can even choose the number of labels to be printed across a page (up to five). The label format data is stored in a .lbl file. MODIFY LABEL (filename) allows editing of an existing .lbl file.

## NEW COMMANDS

Another new command is ZAP. This command removes all records from the active database very quickly and updates active indexes.

Some commands have been renamed, and it will take a little time for those with certain commands engraved in their fingertips to adapt. ERASE has been replaced with CLEAR. The ERASE command now replaces DELETE (filename) command. The STORE command can still be used but there is a simpler alternative: (memory variable) = (expression).

There are also a number of new SET parameters. One good one for beginners is SET SAFETY ON, which forces the system to check with the user before overwriting an existing file.

DOS commands can be run directly from the dot prompt.

The limitation of being able to have only two files open at one time is gone. Up to 10 .DBF files may be open (a .DBF file counts as two if it contains memo fields). A maximum of 15 files of all types may be open at one time.

The number of active memory variables has been increased to 256.

Numeric accuracy is now 15.9 digits.

For those who had been forced to use other editors, the MODIFY command yields a much improved text editor enabling the use of most of the standard text editing key functions; <PgUp>, <PgDn>, <Ins>, <Del> and more.

To get a printout of a file created by the MODIFY command, all you need to do is use the TYPE (filename) command at the dot prompt. A new feature is the ability to read another file into the one being edited and to write the entire file to another file.

There are new date functions that allow manipulation of date fields. The system keeps track of the day, month and year both in numeric and text form. Although the date format is in "MM/DD/YY" form, the PICTURE clause allows both display and editing of Australian date format.

Those who can touch-type fast will benefit from a 15-character keyboard buffer.

dBASE III's macro substitution may prove a step backwards from dBase II. Programmers are warned in the README.DOC file on installation that the "&" function is not reliable if used for file names. In addition, it should not be used in DO WHILE loops and IF=ENDIF constructs. Hopefully, this will not be the case in the next release. Macro substitution has proved to be very useful in general-purpose routines.

The PICTURE option includes some very fancy formatted output capability and can also enforce restrictions on the data that can be entered into a variable. It can display "CR" after a positive number; "DR" after a negative number; left-justi-



fied numeric data; Australian date format; negative numbers in parentheses and more. In addition, among the template symbols there are those that allow the display of "\$" signs in place of leading zeroes or "\*" instead of trailing zeroes.

The new RANGE command when used in conjunction with GET specifies lower and upper bounds of numeric and data variables.

## SET PROCEDURE TO

A procedure file consisting of a number of DO PROCEDURE commands can be created allowing a number of procedures to be resident in memory, thus cutting down the number of disk accesses.

SET RELATION TO is a very helpful command when it comes to transaction handling. A link can be established between two open database files according to a key expression that is common to both files. Up to 10 relations may exist at any time.

dFORMAT is much like ZIP although it has some additional features. A comprehensive online manual is available at all times to the user. One of the nicer features of the dFORMAT utility is the ability to draw boxes on the screen using function keys to specify the co-ordinates.

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**SOFTWARE REPORT CARD**

dBase III

	Poor	Fair	Good	Excellent
<b>Performance</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Documentation</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Ease of Use</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Error Handling</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### System requirements:

16-bit computer running  
PC-DOS  
128K-RAM  
twin floppy drives.

**Price:** \$795.

### Available from:

Arcom Pacific  
252 Abbotsford Rd,  
Mayne, Qld 4006.  
Tel: (07) 52 9522.

The dCONVERT utility will help convert existing dBase II programs to dBase III but is not clever enough to be able to transform every command. In reality it makes more sense to re-design systems to take into account the new enhancements such as the file handling.

The <Esc> key is slightly different in function. It is used in the menu-driven ASSIST to step backwards through the menu tree. During command file execution, an <Esc> only halts execution, at which point the user may type "y" to halt or "n" to resume.

## CONCLUSION

Even though Ashton-Tate has been a little slow, it has a very good product that provides an easy migration path both for the beginner and programmer from dBase II to dBase III. The latter will not satisfy everybody's wish list, but covers almost all of the important ones including: ease of use; performance; an upward migration path for existing users of dBase II; and, perhaps most important of all, good support. m

*Mark Ginsburg is a consultant with Sydney management consulting company Ron Pollak & Co.*

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\*List price not inclusive of sales tax. <sup>1</sup>Wordstar, Mailmerge and Spellstar are trademarks of Micro Pro. <sup>2</sup>dBase II is a trademark of Ashton Tate. © Registered trademark of Epson Corporation.



## APPLICATION / BOOKS

Many of the best books about computing have been obscured by the avalanche of 'Let's go computing' books. While these books are useful, they make little attempt to introduce the culture and practice of computing. They are artifacts, products of a particular time and place that will not endure. Five people, known for their appreciation of computing and its culture, suggest books that anyone interested in computing will find enlightening.

# 31 BOOKS and Several SCIENCE FICTION Stories

## JOHN HUGHES

IN THE early 1960s computing was something of a "black art" whose practitioners were often most noted for non-conformity. Programming and coding were seen as synonymous, most substantial software systems were written in assembler, a good programmer was one who knew that doing a shift could save multiplying (and save half a micro-second every other month) and computer systems provided frequent examples of spectacular failures

I make these remarks because it was against this background that I cut my first piece of code for commercial gain, and it was the books of the following decade — when the principles and techniques behind computing as a discipline were determined — that I found

most influential.

Foremost among these is **Software Engineering : Concepts and Techniques**, by Naur, Randall and Buxton (actually the proceedings of two NATO conferences). This book provides a fascinating insight into that turning point when computing moved from an art to science.

Much of the book is given over to transcripts of conversations between some of the giants of computing (people like Dijkstra, Gill, Strackey and Wirth). In some places it reads like a therapy session, with confessions such as: "We have about 1000 errors each release (of IBM's operating system) and this number seems constant."

It also provides a great source of quotes, such as: "We build systems like the Wright brothers built airplanes — build the whole thing, push it off the cliff, let it crash, and start over again" and "Programmers

call their errors 'bugs' to preserve their sanity; that number of 'mistakes' would not be psychologically acceptable!" A number of themes stand out in **Software Engineering** and these provide the basis for a spate of subsequent books.

Frederick Brooks' classic **The Mythical Man-Month** explores the management side of programming projects. There is a depressing timelessness about his statement that more software projects have gone awry for lack of calendar time than for all other causes combined, and his thoughts on this, as well as topics like planning systems for change, and productivity are drawn out in chapters with fascinating titles such as The Tar Pit, Why Did the Tower of Babel Fail? and Matching a Catastrophe.

In a similar vein, Gerry Weinberg's book **The Psychology of Computer Programming** raises the concept of



the human side of computer programming — programming as a human activity. What makes a good program? What makes a good programmer? What tools does a programmer need to support his trade?

When it comes to programming, we have to thank people like Dijkstra and Wirth for showing us that there is a discipline of programming. They gave us a new view of programming as a scientific subject.

Computer programming can be formalised. Programming languages can be written which support the principles of structured programming, and moreover, these programs written using these principles do work, are easier to maintain and can be proven correct. Anybody who thinks of themselves as a programmer, as more than a code hacker must have encountered the ideas in one of the Dijkstra books, **Structured Programming, A discipline of Programming** or Wirth's book **Algorithms + Data Structures = Programs**.

In the Australian press earlier this year, Joseph Weizenbaum was quoted as saying: "The introduction of the computer into any problem area, be it medicine, education, or whatever, usually creates the impression that grievous deficiencies are being corrected, that something is being done. But often its principal effect is to push problems even further into obscurity — to avoid confrontation with the need for fundamental critical thinking."

Weizenbaum is the sceptic, the computer scientist who accepts none of the cant of computer technology without question, and hence his book **Computer Power and Human Reason** is a must for everyone involved in computing. (It was Weizenbaum who, in 1964-1966, produced the Eliza program so trivialised on personal computers now).

Away from the mainstream of computing and programming, Winston's book **Artificial Intelligence** is a comprehensive survey of the quest for the intelligent computer, and Newman and Sproull's classic book **Principles of Interactive Com-**

**puter Graphics** confirms that there is more to graphics than Peek and Poke; that whether it is in hardware or software, the techniques for manipulating pictorial data are different.

For those who are looking for more than the technical, there is "alternative" literature in computing. Ted Nelson's **Computer Lib/Dream Machine** was aimed at the general reader at the time of the personal computer explosion. It's a sort of Whole Earth Catalog for the computing set. Hidden in its dense text are insights into the myths and folklore — the image of the computer industry.

And finally, if you've ever wondered what goes on after midnight in the computer world, or what it is in the psyche of "computer people" that makes them work while others sleep, drink and make love, Tracey Kidders' **The Soul of The New Machine** is where you find it.

*John Hughes is senior lecturer in Computer Science at NSWIT.*

## PETER SANDERY

### **Computer Power and Human Reason**

by J Weizenbaum.  
Freeman, 1976.

A book that all people associated with computer applications should read. Too many authors pursue the optimistic potential of computers without heeding the possible side effect of "good intent".

Weizenbaum's views on what computers should not be used for are particularly worth reflecting on for their content and almost poetic expression.

### **The Wealth of Information**

by T Stonier.  
Methuen, 1983.

Stonier takes the view that the greatest resource a country has is the intellectual capital of its people. He argues a strong case for more

education for all as an investment in the future.

### **The Brains of Men and Machines**

by E Kent.  
McGraw-Hill, 1981.

An interesting description of the structure and functional characteristics of the brain and some attempts to provide computers with "intelligence". Will it happen? Kent says: "I think that I would like to talk to one to decide, but I might like to treat it kindly anyway, just in case."

### **Mindstorms-Children, Computers and Powerful Ideas**

by S Papert.  
Harvester, 1980.

The Papert philosophy, or at least a sometimes misunderstood subset of it that is viewed through the turtle graphics side of Logo, has almost a cult following. It is worth reading his book to broaden the view of that philosophy to include a wider view of the power and pitfalls of the use of computers as learning tools.

### **The Mighty Micro**

by C Evans.  
Gollanz, 1979.

A very optimistic view of the potential of computers that subscribes to the notion that artificial intelligence development can and will lead to significant changes in society. Should be read with Weizenbaum.

### **Faster than Thought: A Symposium on Computing Machines**

by Ed B Bowden.  
Pitman, 1953.

An interesting collection of papers from 30 years ago as they were presented rather than some current computer historian's view of the time. It is interesting to read these accounts of some of the early machine development in conjunction with Feigenbaum's account of Japanese developments in fifth generation systems.

### **The Fifth Generation**

by E Feigenbaum and P McCorduck.  
Addison Wesley, 1983.

This book presents somewhat of a statement to the rest of the world



that the Japanese have not only taken on a task of considerable importance to the future direction of information processing development, but that they appear to have a reasonable chance of achieving enough of their aims to influence that direction.

Some of my favorite books that relate in some ways to computers are in fact fiction. I have some empathy with the HAL "character" in Clarke's **2001** and its sequel **2010**. Fiction, not fantasy, frequently has more interest and possibly predictive value than some of the "legitimate" predictions of experts in the popular press — when real news gets too dull.

*Peter Sandery is PEO for Computing and Technology in the South Australian Education Department.*

## ARTHUR SALE

SELECTING 10 important books proved to be a lot harder than I had first envisaged. One reason is that there are a lot of books which are very similar (such as the entire shelf of books I possess on Pascal), none of which precisely stands out as worthy of recommendation in this list.

I also found that some books that changed my view of what computing was should not be listed because modern readers might not be able to appreciate them. I was also very dissatisfied at the coverage I achieved, having no mention of communications, databases, 4GLs, artificial intelligence, and so on.

However, the end result is here for you to see. It probably tells you something about me as well as the books. Although programming is one of the hardest intellectual enterprises mankind has yet invented, it is also interesting and at times exciting. I hope both attributes come through.

### A Discipline of Programming

by Edsger W Dijkstra.  
Prentice-Hall.

As a book which changed the entire face of computing, this one is hard to beat. It is not light reading for the faint-hearted; indeed it can only be digested in small doses. However, in true value it is hard to beat despite now being several years old. Dijkstra's insights are not only illuminating; they require the reader to think deeply and to revise his or her own thought habits.

### The Annotated Alice

by Lewis Carroll (Ed Martin Gardner)  
Penguin.

Every person interested in computing should read Alice for Lewis Carroll's delightful plays on computing topics, decades before the first computer was ever built. Look out especially for the White Knight's parts in Through the Looking Glass, and the caterpillars's algorithm for changing size.

### Principles of Interactive Computer Graphics

by W M Newman and R F Sproull.  
McGraw-Hill.

Computer graphics are important in many personal computer applications. Newman and Sproull are encyclopaedic in their coverage — and in a paperback too.

### Systematic Programming

by N Wirth.  
Prentice-Hall.

An excellent introduction to modern ideas of abstract data types and algorithms. Go on to the same author's **Algorithms + Data Structures = Programs** if you find the first to your taste.

### The Mythical Man-Month

by F P Brooks.

Brooks marks the early phase of the infancy of software engineering — the discipline of creating programs that are designed rather than crafted (or even cobbled together). Home hobbyists should read this book for a view of big programming.

### The Psychology of Computer Programming

by G M Weinberg.

Weinberg's book is now rather old, but the principles and ideas are

as readable and relevant as they were when it first appeared.

### Programming Language Standardisation

Eds I D Hill and B L Meek.  
Wiley (also Ellis Horwood Ltd)

Standards are a mystery to most people, at least in the computing field. This book is one of very few which discuss the issues. In view of the prevalence of non-standard languages and features in the personal computer field, I recommend it.

### Cryptography and Data Security

by D E R Denning.  
Addison-Wesley.

Data Security is one of the most active research areas of modern computing. This book is quite mathematical, but a lot can be gained even by the non-mathematical reader. Have you heard of digital signatures, or the DES algorithm?

### Computer Structures

by G Bell and G Newell.  
McGraw-Hill.

The changing shapes of computer architectures over time is a salutary study. I know of no better way to explore this than by dipping into Bell and Newell's amazing coverage of the domain of computer designs. Just like a butterfly-collector's book, this contains a lot of prize specimens.

### Programming in Modula-2

by N Wirth.  
Springer-Verlag.

Everyone should be regularly reminded what good programming languages can be like. The industry seems to ignore quality standards as witnessed by interest in or use of Cobol, PL/I, Ada, Basic and similar languages. Modula-2 has to stand as my example of what a good language is: small, orthogonal, powerful, abstract and a flexible tool in my hands.

*Arthur Sale is Professor of Computer Science at the University of Tasmania.*



## IAN WEBSTER

These are the books I usually push at people when they want to understand the possibilities and position of computers.

### **Godel, Escher and Bach: An Eternal Golden Braid**

by Douglas Hofstaeder.  
Harvester Press

A metaphorical fugue on minds and machines in the spirit of Lewis Carroll. This is the book I always imagine teachers giving precocious student programmers to keep them quiet until they go to university.

A dazzling meditation on programming, language and thought.

### **Computer Lib/Dream Machines**

by Ted Nelson.  
The Book Distributors.

This classic book, published in the early 1970s, details the efforts users make to take control of computer-based environments. Despite showing its age, it is still essential reading for anyone interested in users.

Rumors persist that Ted Nelson is being lured out of seclusion to prepare an updated edition. We can only hope.

### **Personal Dynamic Media**

by Alan Kay.  
Xerox Publications.

The seminal work about personal computing, presenting a vision that still informs developers a decade after its publication. Although this book is out of print, there are copies in Australia. A summary of it was published in the 1980 Microelectronics edition of Scientific America.

### **Programming the Pet CBM**

Raeto West.  
Edward Arnold/Compute Books.

The complete book about using Microsoft Basic based 8-bit personal computer environments. Although written about Commodore CBM computers, there isn't another book written for any computer that comes close to this presentation of the programming

culture that forms around a popular personal computing environment.

### **Genesis II: Creation and Recreation with Computers.**

by Dale Peterson.  
Prentice Hall.

A detailed analysis of the creative use of computers. It is a thorough, informed and unique presentation of artistic activity using computers in the areas of sound, light, symbol and recreation, but frustratingly uninformed when it comes to the past few years and microcomputers.

An extensive bibliography provides a good introduction to several decades of creative activity.

### **System and Structure: Essays in Communication and Exchange**

by Anthony Wilden.  
Methuen.

An attempt to bring together concepts from double bind theory, French psychoanalysis, anthropology, cybernetics, systems theory, ecological biology and Marxian dialectics. This book is a good introduction to the place computing occupies in the order of things.

### **Network Nation**

by Murray Turoff and Roxanne Hiltz.  
Addison Wesley.

The introduction to using computers to support human communication. The authors present their experience operating computer-based conferencing systems in the late 1970s, with emphasis on the innovative EIES network.

### **Mindstorms: Powerful Ideas, Children and Computers.**

by Seymour Papert.  
Basic Books.

One of the very few polemical books about computers and education. It is essential reading for anyone interested in the subject. Although often trivialised and misunderstood by the institutional proponents of the Logo programming language, Papert's vision endures.

A book to be published later this year by his wife, Sherry Terkle, called *The Second Self*, should be as influential as *Mindstorms*.

### **Processed World**

829/55 Sutter St, San Francisco, CA 94104.

This magazine presents a radical statement about the impact of information technology on work and society. It features articles written by people who work with the technology and reports on the activities of European groups involved in the sabotage of computers.

### **Teaching About Television**

by Len Masterman.  
Thames Publishing.

An influential book that has helped transform media studies into a useful subject in schools.

Masterman's ideas will stimulate educators concerned about the poverty of present computer education courses in Australian schools.

### **United States/Big Science**

by Laurie Anderson.  
Harper and Row/Warner Bros Records.

This is the book and LP record of an eight-hour performance called *United States I-IV* by Laurie Anderson. Already recognised as a major artist, she is pioneering performance using information technology.

This is the start of something big, as they say in show business.

## NEVILLE ANGOVE

ALTHOUGH science fiction is often called the "literature of the future", predictions in a science fiction story are included only as a plot device. The aim of a good science fiction author is not so much to predict the future of technological development, but to analyse the effect that a possible development would have on either individual players or the whole of society.

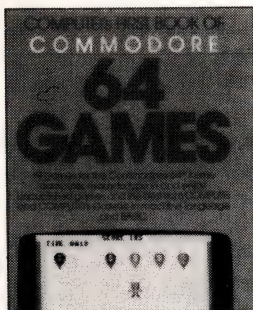
The track record of science fiction authors in predicting the development of computers, for example, has been little better than that of the experts (where computers have even been mentioned in science fiction). More



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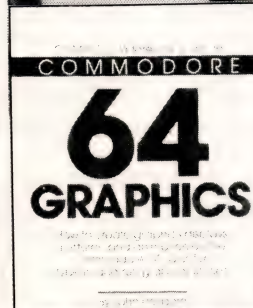
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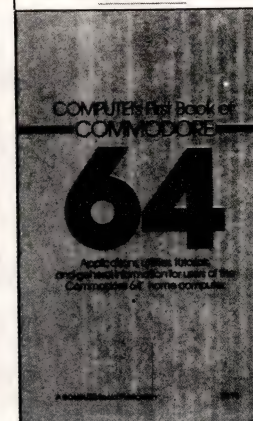
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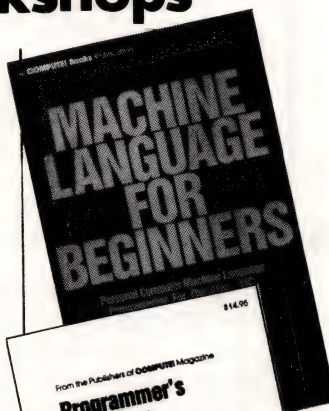
### COMPUTE!'s Reference Guide To Commodore 64 Graphics

A complete tutorial on Commodore 64 graphics. Noted Commodore author John Heilborn explains how to program sprites, multicolored screens, animation, custom characters, and more. Beginners will like the step-by-step instructions and clear example programs. **\$20.95**



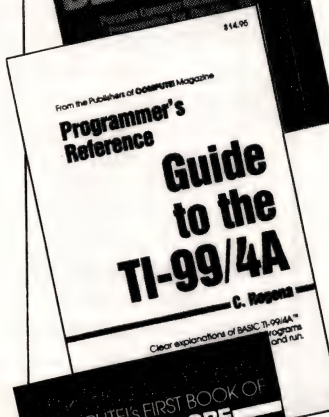
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An excellent resource for users of the 64, with something for everyone: BASIC programming techniques, a memory map, a machine language monitor, and information about writing games and using peripherals. Many ready-to-type-in programs and games. **\$20.95**



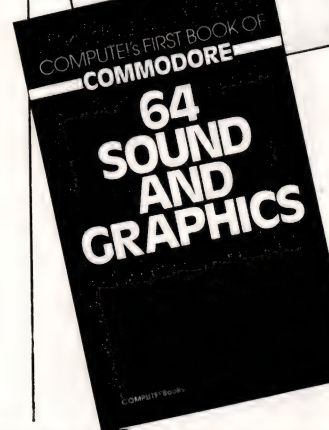
### Machine Language For Beginners

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### Programmer's Reference Guide To The TI-99/4A

Useful for everyone from beginners to experienced programmers. Contains instructions for programming in BASIC, plus more than 40 ready-to-type-in programs for this popular computer. Explanations and examples of variables, files, arrays, high-resolution graphics, music, speech, editing and debugging, conserving memory, and more. **\$23.95**



### COMPUTE!'s First Book Of 64 Sound And Graphics

Clear explanations of the 64's sound and graphics capabilities. Includes many tutorials and example programs: "MusicMaster", a complete music synthesizer; "High Resolution Sketchpad", an all-machine language program for making computer art; and "Ultrafont Character Editor", one of the best character editors available. **\$20.95**

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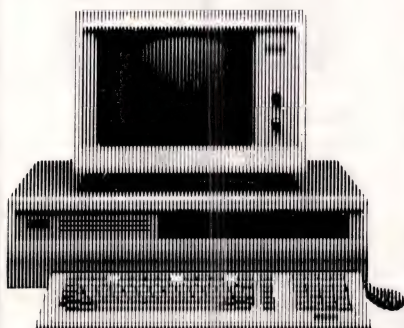
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## APPLICATION

important are the effects that a few science fiction authors see computers having on daily life, and in this regard science fiction has been fairly successful.

The late Mack Reynolds, in a series of novels, discussed a society virtually controlled by the effects of electronic funds transfer, where every detail of daily life was necessarily stored in a computer file. Although his society was benevolent, it did contain the seeds of despotism.

One point Reynolds made frequently was the difficulty of making illegal funds transfers in such a society: with no cash, every transfer had to be recorded, leaving an easy-to-follow audit trail. (Reynolds was obviously unaware of the joys of creative programming.)

Roger Zelazny, in the collection of stories **My Name is Legion**, looks at the effects of a renegade on a computerised society. One man is not recorded in the world data banks, so officially does not exist. But he does have access to an unaudited terminal, through which he can manipulate the computer database (for the good of society, naturally).

The possible repercussions of someone with less benevolent intentions having the same freedoms is not discussed.

Larry Niven, in his **Known Space** series, manages to ignore computers per se. He has adopted the view that computing power would be present mainly as embedded control systems — machines such as automatic food dispensers, intelligent cars and "automatic doctors" use microchips for the purposes for which they were originally designed.

Unfortunately, Niven's viewpoint is due more to his ignorance of computing than to any predictive skills. But he still makes some valid observations.

Jerry Pournelle, whose experience as as NASA engineer (and his current part-time role as a columnist with a computer magazine) has given him a closer understanding of current technology developments. In the novel **A Spaceship For The King**, Pournelle takes Alan Kay's


Dynabook concept to the extreme, predicting pocket terminals with the power of today's mainframes, that can be connected to the local computer network. The only problem Pournelle seems to see in such a future is the difficulty users would have in remembering under what key they stored the trivial information they would collect.

It is when computer developments have been used as plot devices that some of the more interesting concepts have developed. Arthur C Clarke in **The Nine Billion Names of God** has Tibetan monks use a super mainframe to calculate all the possible names of God. A task that would have taken millenia is completed in a few days ... and the stars start to wink out.

Robert Heinlein, in **The Moon is a Harsh Mistress**, has a computer develop "humanity", but luckily it decides to help the good guys. D F Jones in **Colossus** has a super-computer, developed to control the defence of the US, decide that its best defence is to control the world, with mankind as its tools.

Frank Herbert in **Destination: Void** has a computer with God-like powers decide it is God. And John Varley in his **Gaea** trilogy has a plant-controlling "intelligent" computer struggling against the satellite systems it created to help it in its task (probably an analogy to the struggle between distributed data processing concepts and the central DP shop).

In none of the futures envisaged by science fiction authors do books fare well. They are computerised and thus fall easy prey to censorship, although a few diehards still prefer the feel of paper. Curling up in front of the fire with a good terminal does not seem the same as doing the same thing with a book.

The one point made by science fiction authors in their flirtations with computers is that the possible role of computers is limited more by users' imaginations than by technological developments. No panacea is offered for the various effect of computers on society, but the future shock has been eased a little. 



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**A fling with dBase is a joy forever — well, almost — for the hobby programmer producing applications that have to stand up to government auditing. John McBain gives some examples.**

# DEVELOPING a dBase Application

ALTHOUGH I am not a professional programmer, I have spent the past eight to nine months developing a number of standalone applications using dBase II for other users in the government department where I work.

Because dBase II allows fairly complex programming sequences within its command file structure, I have used it to create a number of systems which have little in common with the traditional database system. My experience has shown that the actual limitation on the type of system which can be implemented is restricted more by the imagination of the programmer than by the package itself. By using dBase II, a system can be developed from original concept to final product with considerable speed.

Within days of first receiving dBase II I began work on an assets register system which stores details of all assets (such as desks, chairs, official stamps, and so on) controlled by our Victorian office.

When these items are bought they are entered into the register and

details are then retained of item number, description, price, purchase date, location within the department, and so on. When any items are moved, these changes are also entered into the register so that an up-to-date picture is available.

The register is then used as the basis for stock-taking, details of necessary re-purchase and — considering that it covers more than 5000 items — the computerisation of this system makes the performance of such functions much easier.

The system includes password protection, a complete audit trail on the movement and deletion of assets and complex report facilities, all within a menu-driven system.

A very important aspect of using dBase II is that if you are using the package only in the immediate mode, without the use of command and format files, you are limiting its value in the most drastic fashion.

Anyone who is seriously interested in developing applications must use some form of word processor to create the necessary command files, rather than the dBase II line editor. I

have been using WordStar, in the non-document mode, and it has been most satisfactory. (Having to use the dBase II line editor would be — almost — enough to turn me off the package).

Also ZIP should be used to create the necessary screen and print formats — again, having to define a large number of input screens or print formats using the @ SAY/GET commands would be quite intolerable, and ZIP is therefore extremely useful, almost essential.

## DESIGN CONSTRAINTS

A complete dBase II application can be developed with great speed and, even more importantly, changes to screen formats, databases, record fields, and so on, can be made easily. This means that those applications which are required "immediately" and which may only have a fairly limited lifespan can be implemented effectively. Development using traditional programming techniques just would not be cost- or time-effective.



It also means that, when dealing with end users who are not really sure what they want, it is easy to refine the system until it meets with their approval. If necessary, the final product can then be rewritten in a language which provides speed improvements.

### **dBASE AND SECURITY**

The area where dBase II is most useful, however, is in the rapid creation of totally integrated systems, such as the assets register system mentioned.

But the end users themselves should not be able to access any record without leaving an audit trail. By confining the user to an integrated command file structure it was possible to deny them access to either the dBase II or CP/M command levels, and therefore maintain high overall system security.

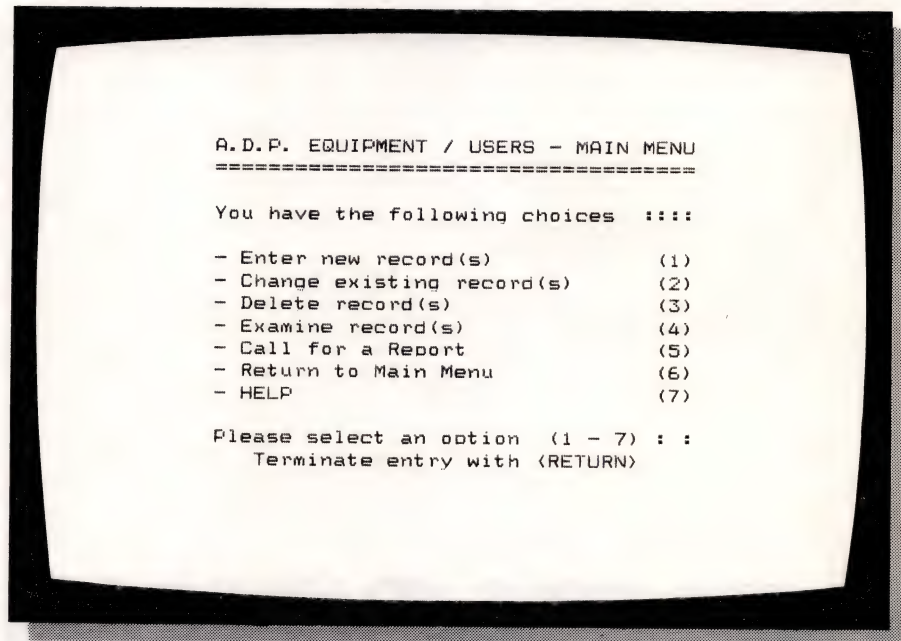
Another advantage of this integrated approach is that any level of password protection can be built into the system.

Initial access to the assets register is via entry of a password — the system auto-boots into the dBase II command file on power up — and if an invalid password is entered the system goes into a loop which can only be terminated by resetting the machine.

***The entire system is menu-driven, with all selections being presented in menu form, all input through pre-formatted screens and output either on pre-formatted screens or via defined printouts.***

The end user can change the password at any time and, if an invalid password was entered at the last attempt to access the system, a warning message will be displayed.

Users can look at the audit records but cannot change them since this facility is protected by another (different) password which is known only to the auditors and can only be changed by them.



**A single system main menu screen.**

This process of controlled, and protected access can be taken to any necessary level, so that password access can cover the entire system, a particular database, a particular record or even a particular field — or any combination of these.

Once access has been gained to the system the user is presented with the first of a series of menus. The entire system is menu-driven, with all selections being presented in

be added with relative ease.

The audit trail is provided by defining the main asset database as the primary database and the audit database as the secondary one. When a record is to be amended the old details are written to the secondary database before being amended in the primary one.

If a record is deleted from the primary database the details are automatically written to the secondary (audit) database before the deletion is completed.

This means that the user cannot, either accidentally or deliberately, amend or delete assets details without leaving a clear audit trail. Therefore the necessary auditing requirements are met.

### **FORM LETTERS**

The assets register system is a fairly standard utilisation of dBase II, since all the functions entail the manipulation of database records, but other applications depart from that standard.

One such application, again part of an integrated system, is the creation of form letters.

These are standard letters which are sent out to various areas each month but which contain some



changed information each time. One way of doing this would be to use a package such as WordStar's MailMerge option.

This approach has a number of disadvantages: the user would have to learn how to use the other package, dBase II would need to be interfaced to the other package and, most importantly, system security would quite probably be compromised since most such packages require access to the operating system — defeating password protection.

Using dBase II, a pre-formatted screen display allows the user to input the variable information, and then the form letter is printed by dBase II. The main information is stored in a database, and amended just like any other record. Then that information is included in the form letter, together with any other common variable information entered by the user, and the letters are automatically printed. This makes form letter production easy, without compromising database security.

## USER DOCUMENTATION

Another example of the level of integration which is possible with dBase II is in the provision of user

documentation to explain the system functions. Instead of providing a separate manual, each menu screen contains a HELP option as one of its selections.

If this option is selected a prompt appears below the menu advising that help is available with all

also a major design consideration which can influence all systems created using dBase II.

One function on the system concerned requires the statistical analysis of information which is stored on the database, and this information must be analysed in

**Each menu screen contains a HELP option as one of its selections. If this option is selected a prompt appears below the menu advising that help is available with all procedures.**

procedures, and that displaying either a single help screen or all screens can be selected. Each of these help screens, contained in a single command file, explains how to use an option from the menu.

This approach has the advantage of including all information about the system within the system and also makes the information more readily available and more likely to be used.

Another system, developed for a different user, demonstrates both an area where imagination is useful and

date order — weekly, monthly and quarterly.

To accommodate this the system asks for input of the current date when the user signs on at the beginning of the day. A simple routine is then used to convert that date input (in format DD/MM/YY) to the equivalent Julian date (YYDDD). (Under this system 21/02/84 would be 84052.) The Julian date is then automatically written to all records as they are entered which makes the comparison and analysis of records based on date a simple matter.

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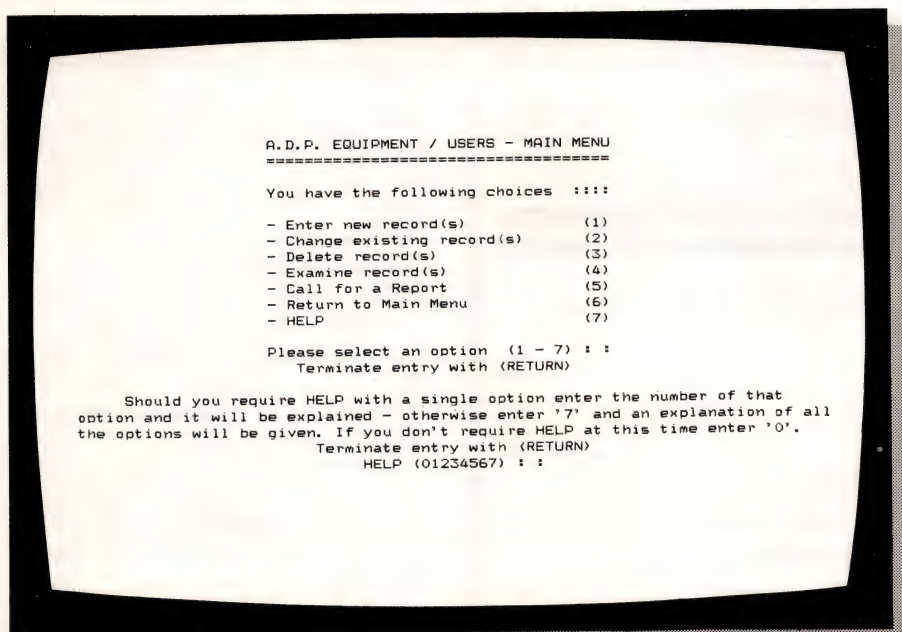
Company .....

Address .....

Postcode ..... Telephone .....

MC





The main menu screen after HELP has been selected.

## SPEED OF THROUGHPUT

An area where careful consideration of command use is important is in the use of the dBase II SUM and COUNT commands. These commands are very useful but any application which requires totals on more than a few fields or variables reduces their value considerably since they are simply far too slow.

To overcome this lack of speed it is possible to use the dBase II MACRO function to sort information from a large and complex database into a number of memory variables. A single pass can then be made through the database, sorting and summing all the information in each record, in a fraction of the time that the equivalent SUM/COUNT procedure would take. Because of the sequential nature of record storage within the databases, procedures which require access to large portions of a database must be kept to a minimum. A procedure which is marginally slower in processing each record, but which requires less access to the database itself, is preferable to one which requires considerable access.

The possible "mistake" of using a procedure for its intrinsic speed is also evident when deciding whether to use the FIND command, which requires indexing of the database, or

the LOCATE command.

Although a FIND on an indexed database will take considerably less time than an equivalent LOCATE on an un-indexed database, I neither index databases nor use FIND in most cases, preferring to use LOCATE.

Since most location sequences — many of which will result in the amendment of the information on the database — require the ability to locate records which meet a number of user-specified criteria, the FIND command will be virtually useless.

**A procedure which is marginally slower in processing each record is preferable to one which requires considerable access.**

A LOCATE sequence can also benefit from the use of macros. In a number of my systems the user is given the option of specifying anything from one to five possible fields for a search sequence.

By using macros to create the command line to do the LOCATE it is possible to set up an 18-line command file which covers all possible combinations of those five

fields. Using a DO CASE sequence, for example, this requires 60 lines of code.

## DATA BACKUP

In keeping with the integrated, user friendly approach, I also prefer to provide a database backup facility within the menu system.

This way the user selects "Back-up" from a menu, is told to insert the backup floppy disk into the drive, and then the entire database (or databases) is copied using the COPY command.

The assets register system, which requires a number of backup disks, uses a "Mem" file to record details of the records stored on each disk, together with the number of times a particular disk has been used.

This information is also written to each disk and this ensures that the user inserts the correct disk at the correct time and that each disk is only used a specified number of times.

After the system has written to a particular disk the set number of times, it asks for the insertion of a new disk, and won't copy to the old one. This reduces the chance that backup data will be lost due to an old or faulty disk being used.

It should be noted that the particular microcomputer on which dBase II is being implemented can have a drastic effect on the program's efficiency.

## OTHER CONSIDERATIONS

Three other factors should be mentioned: documentation, support software and problems.

Although a number of dBase II users do not like the manual that comes with the system, I found it to be quite satisfactory.

This manual acts as a basic reference source on all commands and, together with information which



can be gleaned from articles in various magazines and from other users, will provide sufficient information to use the package well.

A number of other good reference works on the package are published, but I feel that a sense of experimentation on the part of the user or programmer will provide the most useful information.

Of support packages I feel that the two most important are a good word processor and ZIP. The word processor allows you to create properly formatted command files, including the ability to merge a number of files into a single system, while ZIP makes the creation of format files a simple matter.

Version 2.41 of dBase II has four utilities which could be useful. These utilities allow for the automatic creation of menus, labels, report forms and complete record entry/edit command files, in much the same fashion as ZIP works.

They perform these functions very quickly and allow the easy creation of complete systems. The functions are fairly limited — the file generator only works on a single indexed database — and the code which is produced is verbose and cumbersome.

Even the novice dBase II user would probably be able to write better code — it would take a little longer but would be more compact and far more sophisticated. (This is, of course, a matter of personal taste.)

There are also a large number of general purpose dBase II packages — such as dUtil, dBDoc, dBPlus, dBra, and so on — which may prove useful in some areas. Again, it is a matter of personal taste: I don't use them and don't think that I've suffered greatly because of this.

### PROBLEMS

There are problems associated with using dBase II.

Although it is a very impressive package, dBase II does have a number of definite limitations, together with its share of "bugs" which range from the merely annoying to the potentially disastrous.

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SOFTWARE REPORT CARD

dBase II (Vs 2.4)

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### System requirements:

Any major 8-bit or 16-bit operating system,  
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Perhaps the greatest limitation is the restriction to two open databases and 64 memory variables. A number of the more complex applications require access to either more databases or the ability to store the contents of a number of database fields in memory variables — and not being able to do either has meant a lot of wasted time finding ways to get around the restrictions.

Many of the "bugs" have also been documented and are well known to most people who have used the package extensively — such as the infamous and potentially mass destructive FILE (' ').

However, I have been assaulted by a number of others which are (apparently) undocumented and


which have led to no end of head-scratching and command file re-writes. DON'T include either 'if' or 'else' at the beginning of any line bounded by the TEST ENDTXT commands — it causes strange errors in otherwise correct command sequences.

In general, then, it is frustrating to create a dBase II system and then not have it work because of some inherent fault in the package itself — and have to spend long hours eliminating the possibility that it is a programming error.

In some respects there are also too many commands or, perhaps, poorly implemented commands. For example, when creating a command sequence to perform a specific function, and feeling delight that dBase II has the exact command needed to perform that function, it is annoying to discover that the command either doesn't work as expected or, more likely, is just too slow.

And this, of course, is one of the main annoyances in using the package — in many areas it is intolerably slow.

All these problems can be resolved in a number of ways and, in the final analysis, the limitations on this package are determined more by the imagination of the user than by any other single factor.

In conclusion, then, dBase II is an extremely powerful package which can be used to meet a number of user requirements. Despite the limitations, quirks, frustrations and annoyances — I like it! 

*John McBain is Assistant Inspector (ADP) with the Department of Industry and Commerce. He acts as advisor on the installation and use of personal computer systems at the Department's offices in Melbourne.*



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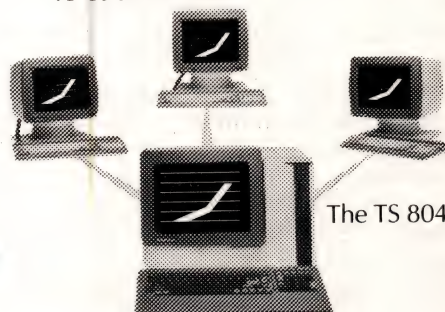
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**Implementing a database design can be easier than you think. Paul O'Connor shows how DataFlex can be used to create a single file application in a few minutes.**

# FLEXING

## Your Muscles

DATAFLEX 2.0 was introduced to the marketplace in November 1983, at Las Vegas Comdex. The major enhancement on the previous version was the introduction of a "compiler". While not a compiler in the true sense of the word, it does produce a semicompiled code which has a significant speed advantage over interpretive systems.

DataFlex Version 2.0 includes a fullyfledged programming language with English verbs invoking DataFlex functions. Coupled with its very fast relational database manager, the result is a sophisticated and powerful application development tool.

This article is intended only as an introduction to DataFlex. It is not intended to give an exhaustive presentation of the DataFlex command language, but to show how DataFlex can be used for fairly simple applications in spite of its ability to handle those applications that require more power.

### A SIMPLE APPLICATION

Creating a single file data entry screen with DataFlex is a simple process. The program we will create

will allow us to store, retrieve, change and delete the personal details of students attending a fictional college in Geelong. We will also be able to produce various reports or even a mail/merge file from our database file using the DataFlex query language. However, there's no space to explain that facility.

### THE SCREEN IMAGE

The first step is to create an "image" of how you would like the screen to appear when it is being used for data entry. This can be done with the DataFlex text editor or some other editor of your choice.

Note the first and last lines. The `"/STUDENT`" in the first is simply the name by which the DataFlex compiler will recognise the screen. The last line `"/★`", tells the compiler that no more screen image lines follow.

The underscores represent the "windows" where we will place the data to be saved in the database. A full stop in a window will force numeric-only input to that window. Date windows are shown as `"_/_/_."`, and will accept only valid dates.

AUTODEF is the means by which we translate a screen image into the source code for a data entry program.

After the screen image has been saved to a file — if using a word processor, make sure it is saved as an ASCII file — you can then enter DataFlex.

We first bring up the main DataFlex menu by entering FLEX at the system prompt. Then enter "2" for DataFlex configuration. A new menu will be displayed. Option "4" on this menu is AUTODEF. We select this option and AUTODEF will ask us for the name of the screen image we wish to process. We reply with the name of the file we created in step one — in this case STUDENT. Then AUTODEF asks us: "What is the maximum number of records STUDENT could have?" We pick a figure out of the air and reply "500". If necessary, we can alter this figure at a later stage. (For the technically minded, DataFlex uses B+ tree indexing and will keep one record from each level of an index in memory during processing. Also, the more records we have in the file, the more levels the index requires. While many levels may be accom-



/STUDENT

AMS COLLEGE OF ADVANCED EDUCATION - STUDENT DETAILS

Student Number .....

Surname ..... First Name ..... Middle Name .....

Address .....

City ..... Postcode .....

Phone (\_\_\_\_) .....

Date of Birth \_\_/\_\_/\_\_

Degree Diploma Stream .....

Year of Commencement ...

/\*

AMS COLLEGE OF ADVANCED EDUCATION - STUDENT DETAILS

Student Number \*\*\*\*\*

Surname ..... First Name ..... Middle Name .....

Address .....

City ..... Postcode .....

Phone (\_\_\_\_) .....

Date of Birth \_\_/\_\_/\_\_

Degree Diploma Stream .....

Year of Commencement ...

ENTER FIELD NAME FOR FIELD\_1:

1. STUDENT_NUMBER	2. SURNAME	3. FIRST_NAME
4. MIDDLE_NAME	5. ADD_1	6. ADD_2
7. ADD_3	8. CITY	9. POSTCODE
10. STD_CODE	11. PHONE_NUMBER	12. DATE_OF_BIRTH
13. STREAM	14. YEAR_COMMENCED	

DEFINING INDEX #1

ENTER FIELD NUMBER TO INDEX OR <RETURN> TO END:

Above: Data entry form created by using a word processor.

Left: DataFlex prompting for field names — referred field is filled with asterisks.

Below: DataFlex is prompting for the key fields for the first index.

modated within the available memory, the speed of DataFlex reduces as the number of levels increases.)

AUTODEF reads the STUDENT screen image file and prompts us to assign names to each of the windows on the image. Each window is highlighted with asterisks as we are prompted for the name we wish the program to use. These names cannot have embedded spaces.

When all the windows have been named, AUTODEF displays names along with a number representing the relative position of each field in the database record for this file. AUTODEF now prompts us to specify which fields we would like to have indexed. Our data file will be indexed on student number, student name and degree stream. So we reply: "1", "2 3 4" and "13". Note that, in the case of the student name, we have concentrated fields two, three and four into 1 field for the index. This will allow us to hit directly on the record for "John Paul Smith" when there is more than one "Smith" on file.

When we have typed in the last field to index, AUTODEF creates the file definition for the file STUDENT,



FILE DEFINITION LISTING FOR FILE #30

\*\*\*\*\*

FILE ROOT NAME = STUDENT  
 USER DISPLAY NAME = STUDENT  
 DATAFLEX FILE NAME = STUDENT

\*\*\*\*\*

RECORD LENGTH = 256 (USED = 225)  
 MAX NUMBER OF RECORDS = 10 (USED = 00)  
 DELETED SPACE IS REUSED  
 MULTI-USER RE-READ ACTIVE

\*\*\*\*\*

FIELD NMBR	FIELD OFFSET	FIELD LEN	FIELD TYPE	DEC PTS	MAIN INDEX	RELATES--TO FILE	FIELD
1	1	3	NUMERIC	0	0	0	FIELD_1
2	4	25	ASCII		0	0	FIELD_2
3	29	15	ASCII		0	0	FIELD_3
4	44	15	ASCII		0	0	FIELD_4
5	59	33	ASCII		0	0	FIELD_5
6	92	33	ASCII		0	0	FIELD_6
7	125	33	ASCII		0	0	FIELD_7
8	158	25	ASCII		0	0	FIELD_8
9	183	2	NUMERIC	0	0	0	FIELD_9
10	185	3	ASCII		0	0	FIELD_10
11	188	7	ASCII		0	0	FIELD_11
12	195	3	DATE		0	0	FIELD_12
13	198	27	ASCII		0	0	FIELD_13
14	225	1	NUMERIC	0	0	0	FIELD_14

File definition for the student records database, using default field names.

```

/*
OPEN STUDENT
ENTER STUDENT
AUTOPAGE STUDENT
  ENTRY STUDENT.STUDENT_NUMBER      {REQUIRED}
  ENTRY STUDENT.SURNAME              {REQUIRED,CAPSLOCK}
  ENTRY STUDENT.FIRST_NAME           {REQUIRED}
  ENTRY STUDENT.MIDDLE_NAME
  ENTRY STUDENT.ADD_1
  ENTRY STUDENT.ADD_2
  ENTRY STUDENT.ADD_3
  ENTRY STUDENT.CITY
  ENTRY STUDENT.POSTCODE              {RANGE = 0000, 7999}
  ENTRY STUDENT.STD_CODE
  ENTRY STUDENT.PHONE_NUMBER
  ENTRY STUDENT.DATE_OF_BIRTH
  ENTRY STUDENT.STREAM
  ENTRY STUDENT.YEAR_COMMENCED
  RETURN
ENTEREND
ABORT

```

Data entry code generated by AUTODEF for student records database.

and the source code for our data entry program — saved under the name, in this case, STUDENT.FRM.

## COMPILING THE PROGRAM

AUTODEF will return us to the DataFlex configuration menu when the source has been created. We

then select option "6" to "compile a DataFlex configuration", and supply the compiler with the name of our source code: STUDENT.FRM. When the compiling process is complete, a new file will have been created: STUDENT.FLEX. This file contains, in a wonderful format, all of the DataFlex instructions needed to

make our data entry program work. It will rarely be larger than 16K-bytes and is transportable across operating systems without change.

## RUNNING THE PROGRAM

The compiler will return us to main menu when finished. We select option "6" to "run a DataFlex configuration", and supply the name of the program: "STUDENT". Our data entry screen appears on the monitor. In order to use this screen we first need to know how the Flex-Keys — which are DataFlex functions keys — are set up. The Flex-Keys can be configured (by the SETSCREE utility) to be invoked by just about any function key on our keyboard. These functions are automatically installed in a program when the ENTER macro is used. Which functions are invoked by which keys depends on the computer you are using, and whether you have changed any default setting.

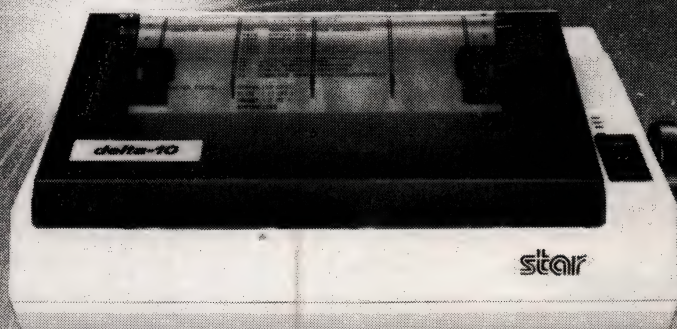
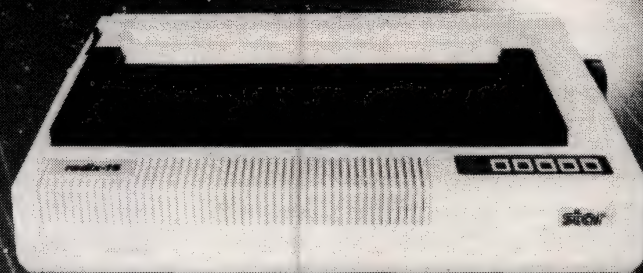
We are now ready to create our database of students. Initially, the cursor is located in the first window. We simply fill in the windows with data. When the last window has been filled in, the record is saved to the database and the windows are cleared, ready for the next record. To move the cursor from one window to the next we press <RETURN>. To move it back one window we press the <BACKFIELD> Flex-Key.

After having keyed in particulars for some 500 students we'll probably discover that we made mistakes on a few of them. To alter an existing record, we first have to "FIND" it. This is accomplished by placing a key value in an indexed window (for example, SMITH in the "Surname" window) and pressing the <FIND> Flex-Key. DataFlex locates the record with a key value nearest to that specified and displays the data in the windows. We then move our cursor to the window we wish to change, type in the new data, and press the <SAVE> Flex-Key to save the new data to the database.

To skip backwards and forwards through the file, after having used <FIND>, press the <PREVIOUS>



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Flex-Key and the <NEXT> Flex-Key. You can pass through the entire file in this manner.

### CUSTOMISING DATA ENTRY

Validity, type and/or range checks, along with a number of other handy features, can be applied to any of the input fields in our program by simply using one or more of the possible options. Any of these options can be included by editing the command file STUDENT.FRM and recompiling it. The commands are placed alongside the ENTRY commands. To give the reader an idea of the use of these options, I have altered the example program (screen at left) to include some of these commands.

Help screens are set up by using a page name and specifying the HELP command; /HELP1 HELP. Any number of help screens can be defined.

### QUERY

Having now created a database file with multiple indices, we can use DataFlex to create customised reports.

DataFlex has a very powerful query language called QUERY that

allows you to selectively extract information from the file and format the data for reports, screen displays or disk files.

To use QUERY either load it from the operating system or select it from the DataFlex Demo Files Menu or other menus where it may be

The advantage of being able to create a file is that you can interface this file with a word processor or spreadsheet.

The power of DataFlex has not been completely covered in the STUDENT program. DataFlex has a very powerful command language


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**DataFlex has a very powerful command language that can be used to create very sophisticated applications, and a macro facility defines your own DataFlex commands.**

---

defined. You will be given a list of files to select from, and then QUERY takes you through a series of questions prompting you to select information from the file. Both numeric and alphanumeric fields can be interrogated. Date fields can also be selected by logical operators.

At the end of each QUERY you have the choice to direct the output to the screen, the printer, a file, or to a report image. The report image can be compiled and will become a permanent report program that can be run like any other DataFlex configuration.

that can be used to create very sophisticated applications, and a macro facility is available which allows you to define your own DataFlex commands. 

---

*Paul O'Connor is a director of Australian Microcomputer Solutions (AMS). He is a graduate in computing and mathematics and has worked as a programmer and analyst in both the government and private sectors prior to establishing AMS.*

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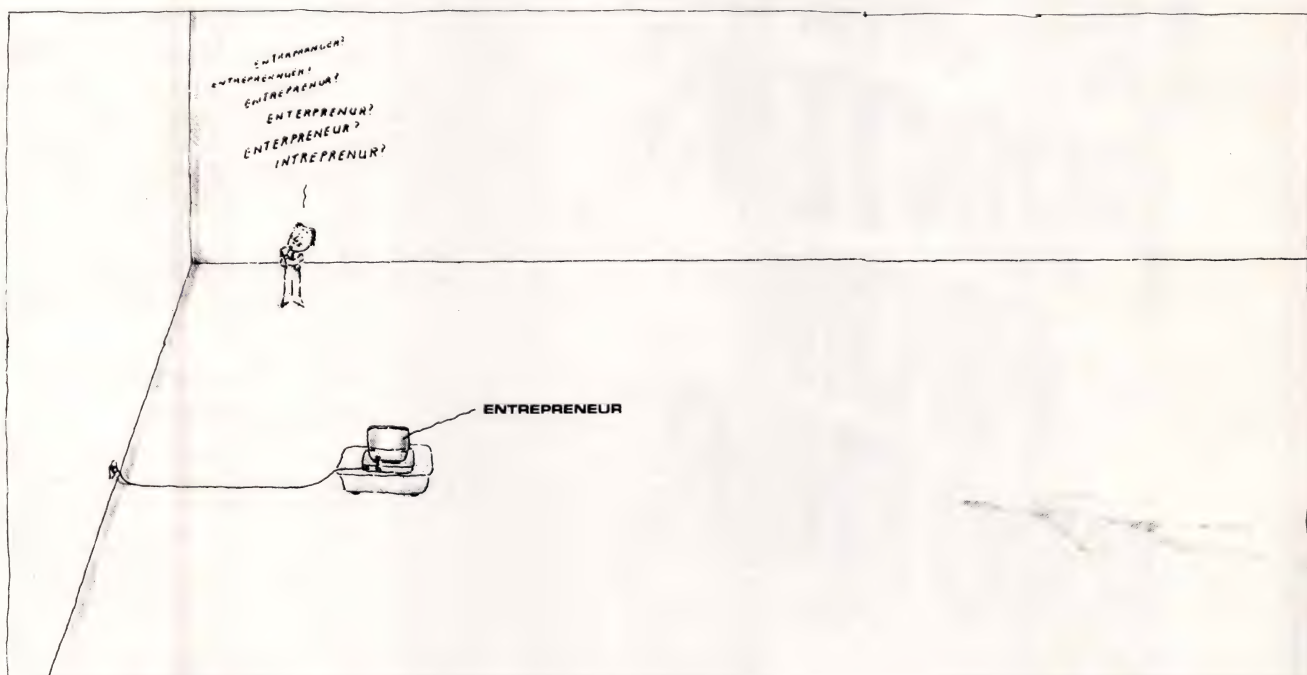
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**You wouldn't build a house without a blueprint . . . so why would you tackle a database without one? Manuel Sotomayer explains why it is so important to design a DBMS before you shop for software.**

# BLUEPRINT for a Database

WOULD you build a house without a blueprint? Would you drive up to a vacant lot, stack timber on one side and tools on the other, and begin to hammer nails into boards without any idea of where to put the doors or how high to make the ceiling?

In effect, that's exactly how many people set up their computer databases. They go to their local computer store and buy hardware and software (timber and tools) and proceed to build a database without first formulating their ideas in a design (a blueprint) that describes exactly how each piece will fit together. The result can be frustrating and expensive and can lead to a long-term disenchantment with microcomputing.

Remember that the structure and capabilities of a database depend on the database management system (DBMS) software you use to manipulate the database and generate applications. If you already own a DBMS, keep in mind its limitations and special features when you design a database. If you haven't yet bought a DBMS, creating a blueprint of a database will help you choose the DBMS that's right for you.

To design a database, you first have to decide on a set of design goals. Ask yourself what functions

you'd like the database to have and make a list of them. For example, you may want the database to schedule appointments, calculate inventory values, and produce shipping labels.

Once you feel the list is complete, go back and weed out functions that are not needed immediately or are non-essential. Continue to sort the list until only the most important functions remain. Organise the tasks into groups, putting the functions that are needed immediately into Phase 1 and those that can be added later into Phases 2, 3, and so on. Listing the tasks in order of their importance will help you allocate time and resources more efficiently.

With design goals determined, you now need to figure out how to implement them. Begin by breaking each application into a series of major tasks. Gradually add layers of detail by reducing each task to its subtasks (Figure 1). Take your time and pay close attention to detail. It's better to discover that you've missed a step now when you can correct it on paper than to rebuild your database after it's installed.

The resulting time outline is the basis of your blueprint. It should help you view each function as a series of logical steps. The outline

will also be needed later, when you write the routines that will be used by the DBMS.

## DATA FLOW DIAGRAMS

Now that you know what the database will be used for, it's time to focus on the way information will flow through the DBMS application. To do that you must identify and label each data element and chart its course with a data flow diagram.

Such a diagram tracks each data element from the time it arrives as input to your application until it departs transformed into some form of useful output, such as a letter, an invoice, or an inventory report. In the process of creating the diagram, the nature and extent of the database that is required to support your application will become apparent.

Putting together a data flow diagram is relatively easy. All you need are four common symbols to represent each of the four basic building blocks — process, database, source/destination, and data flow. A process is any function or task that acts on data (for example, an inventory file). The source/destination is the location where data originates and is eventually delivered (for example, the



Major Tasks	Subtasks
A. Ring up sale	<ol style="list-style-type: none"> <li>1. Enter card number</li> <li>2. Enter amount of purchase</li> <li>3. Verify card number</li> <li>4. Produce receipt</li> <li>5. Update customer's account</li> </ol>
B. Bill customer	<ol style="list-style-type: none"> <li>1. Access customer record</li> <li>2. Calculate current balance</li> <li>3. Print statement</li> <li>4. Mail to customer</li> </ol>

**Figure 1: The first step — outlining major tasks.**

customer). Data flow is the link between processes, databases, and sources/destinations. The data flow symbol identifies what data is being passed (for example, the part number being called from the inventory file and sent to the invoice report).

Start by diagramming each major task shown in the outline, connecting each task to other processes or to databases by using data flows that show what data is being passed. Add the source of the information and the destination of any output, and you have a basic data flow diagram (Figure 2). Add layers of detail by expanding each major task into its subtasks, adding connecting data flows where necessary.

Review the data flows carefully and make revisions. Now is the best time to make corrections or alterations to the basic design. Stop only when you feel confident that the data flow diagram accurately reflects how each task will be handled. The resulting diagram should provide an overall view of the design and a clear description of how the entire application will function.

The creation of the data flow diagram produces a valuable by-product: a list of all the individual data elements that will be used to complete each task.

Once again, it is time to establish priorities. Remember that database functions are affected by the size of the database. The larger the database, the longer it will take you to search for a specific piece of information or to sort the data into a

desired order. Fight the temptation to include every conceivable piece of information you might need. Try to limit your choices to those elements that are absolutely necessary to complete the tasks you've defined.

Take each remaining data element and fill out its definition to include some required essentials. First, a suitable name must be found. Most DBMS programs require that field names be no longer than eight to 10 characters (dBase II's limit is 20 characters, and Condor accepts no more than 15). Concentrate on short, descriptive names like CUST-NAME, ACCTNUM, or PHONE, and avoid using cryptic acronyms. Next, assign a length attribute to each data element. Keep in mind that space is at a premium.

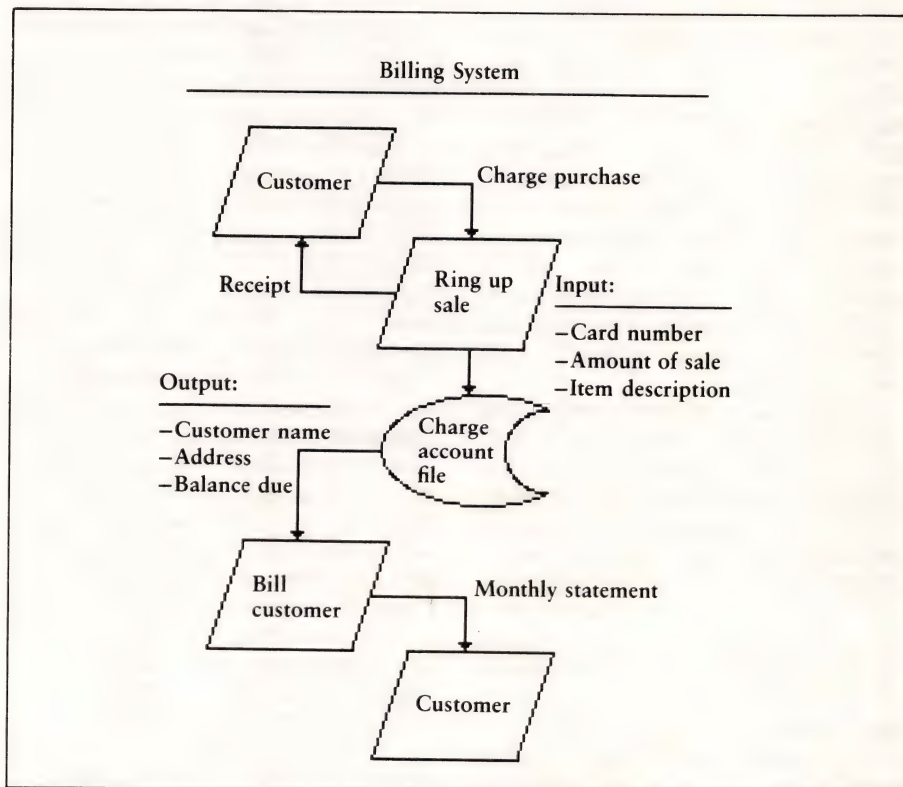
You might also note if any special formatting is required, such as the hyphens within telephone numbers or the dollar signs, commas, and decimal points within dollar amounts. Since DBMSs vary in their ability to handle formatting, you should know what your require-

ments will be before you choose a package.

## RELATIONAL TABLE

Databases generally fall into three categories: hierarchical, network, and relational. The first two are usually found on mainframe computers and minicomputers and are designed to handle very large applications. These large databases often work in real-time environments, such as an airline reservation system, where the response to an inquiry is available in a matter of seconds. They usually require powerful processors to operate them and a small army of professional programmers to develop and maintain them.

But relational databases are less complex in design and are easier for most people to grasp conceptually. Most DBMSs available for microcomputers are relational. As the name implies, a relational database is constructed by establishing an orderly relation among pieces of information.



**Figure 2: Step two — data flow diagram of a transaction.**



Table of Customer Information

Record Number	Account Number	Customer Name	Balance Due (field)
1	955 6637 1	Blackburn, John R.	\$ 126.57
2	341 1865 3	Jamesson, Melody	\$ 397.52
3	621 6531 5	Young, Thomas S.	\$ 154.73
4	625 8730 6	Simmons, Gloria T.	\$ 201.42

Figure 3: Step three — a relational database expressed as a two-dimensional table (columns = fields; rows = records).

Record Layout

Customer Name	Address	Account Number	Current Balance
Length = 25 Type = char	Length = 30 Type = char	Length = 8 Type = numeric Format = 999 9999 9	Length = 7 Type = numeric Format = \$99,999.99

Record length = 70  
Maximum records (360K floppy disk) = 5200

Figure 4: Step four — record description for a customer file.

This relation is best viewed as a two-dimensional table. The columns are called "fields" and contain data of a specific type such as names, account numbers, or amounts. Rows are called "records" and represent a collection of related fields that together describe an individual unit such as a customer, a company, or an inventory item (Figure 3).

To build your own table, begin by defining the relationships you want to establish. Relationships can be identified by looking closely at the data flows. Can the information be grouped (related) together in a consistent pattern? For example, a pattern may consist of name/address/phone number/customer, part number/price/part name/inventory, or apartment/rent/tenant/property.

## RECORD LAYOUT

Search through the relational table and look for logical relationships. You might find that you'll need more than one database in order to account for all the data elements,

grouping them together to reflect any alternative record/field relationships you've developed. The result is a record layout description for each database (Figure 4).


The record layout description allows accurate estimates to be made of the number of records in the database, the number of fields per record, and the length of each record. These parameters are critical because they will determine what capabilities to look for while shopping for a DBMS.

Once you have completed the record formats, the design is essentially complete, but you will probably go through several design cycles before you're completely satisfied. In the process, your original ideas will no doubt be somewhat altered, but the effort will add polish to your final design.

When at last you are satisfied that the design adequately reflects your stated design goals and that each task will be handled successfully and efficiently — freeze it. That is easier said than done (for many people it is the most difficult step),

but having the major elements of the design firmly defined and recorded before beginning the implementation stage is crucial. If they aren't settled, you can quickly get bogged down in a tangle of unending revisions and be constantly forced to redesign your application while your original goals fall away one by one.

Once you've approved a design, stick to it. Limit changes as much as possible and steer a resolute course toward your design goals.

With a completed blueprint in hand, you will be armed with all the information you need to begin serious shopping. You can now evaluate the available hardware and software and arrive at the right combination of features and capabilities that you need to build your database and bring life to your design. 

*Manuel Sotomayer runs a consulting company, Stellar Software in San Francisco, USA, specialising in database design for business applications.*



**Installing a personal computer systems in a small office can be fraught with problems. But hardware and software manufacturers are producing new methods such as tutorials, hands-on experience and hot lines to help new users, as Nigel Davies explains.**

# The **(small)** BUSINESS End of Computing

SMALL business and management are the two major applications for computers costing up to \$15,000, providing you ignore home computers costing less than \$1000.

Computers have been used by small businesses for five or six years. Typically, they are used by companies with little knowledge of computers. The major application is accounting, one of the most difficult applications to instal and operate.

Management applications have emerged in the last two years to take 50 per cent of the small computer market. The major applications are financial modelling and word processing. Although the manager or administrator rarely has computing skills, he often has an advantage over the small business user in that support may be available from an established data processing department within his organisation.

### SUPPORT PROBLEM

The support problems experienced by small business and management users of microcomputers can be traced to two causes. Both groups are typical first-time computer users. They require considerable outside help in selecting, buying, installing and operating computer systems. Manufacturers' and dealers' profit margins on microcomputer sales are not large enough to provide the more comprehensive support typical of the mainframe and minicomputer markets.

Consequently, those users who need support most have the least access to it, at least from the traditional source, the manufacturer.

Inadequate support has been identified as a major factor contributing to low user satisfaction in the small business computer market.

### SYSTEM EVALUATION

Because of inexperience, many new computer users are unaware of factors they should consider when evaluating small computer systems. I conducted a survey of 57 potential small computer buyers and asked them to list factors they considered important in evaluating computer systems. Most (75 per cent) identified obvious considerations such as system cost, but far fewer identified more important factors such as compatibility (3 per cent), reliability (19 per cent) and adequate support (44 per cent).

These attitudes change when users confront the hard reality of making systems work for them. When I repeated the survey with a group of established small business computer users, the most important factor identified was the system's ability to do the job. Cost effectiveness fell to fifth position, behind support, reliability and software availability. It would save considerable disappointment if users were aware of these relativities before they bought a computer.

The lack of computing knowledge among first-time buyers makes them prey to the excesses of the advertising industry. One manufacturer was pitching its computer at small businesses, but failed to mention that buyers would also need a printer and at least \$2000 worth of business software before the computer was of any

use. Only when the buyer had spent anywhere from \$2700 to \$4000 over and above the cost of the computer could he or she begin worrying about disk and memory capacity.

### SYSTEM INSTALLATION

Once the user has chosen an appropriate computer, the next problem is transferring existing manual systems to the computer and establishing day-to-day operating schedules.

First, the equipment has to be removed from its boxes and plugged together. This is not always as easy as it sounds. I recently helped a user who had bought an Apple lookalike from Singapore. He really needed a linguist. The manuals and all markings on the cases, including port identifiers and keyboard legends, were in Chinese characters.

Second, backup copies of all master disks and system/application disks for all applications software have to be made.

Third, the chart of accounts has to be set up. New users will almost certainly need outside help to instal some of the more complex small business accounting packages.

Fourth, current account balances must be input, ensuring that the system as a whole balances.

Last, runtime procedures, including backup and restore, and a system for logging program events and fault calls must be prepared.

### OPERATOR TRAINING

Many system problems are caused by incorrect operating procedures.



The average small business employs five to six people and never hires a trained computer operator. The operator's job generally goes to whoever happened to be doing the manual bookwork previously.

Accounting software suppliers usually provide some free training with each package bought: half a day for two operators is typical. But there may be significant differences between the amount of training provided and the amount actually needed. The managing director of one major Australian accounting software supplier freely admits that 48 hours of hands-on tuition is needed for users to become proficient in using his company's product.

## ONGOING SUPPORT

Once the system is installed and running more or less successfully, the small business depends on the supplier for help with day-to-day running problems. These can vary from minor queries, such as the correct method of initialising a new disk, to major problems such as a blown motherboard or a critical software bug.

Until recently, the support users received was compromised by a number of deficiencies in companies supplying hardware and software. Many of these deficiencies arise because of the newness of the market, its volatile nature and fast growth rate. Some of the main deficiencies are inexperience, instability and one-man operations.

Too many companies are trying to service the market without having the necessary experience in computers. To some extent, these companies have been seduced by the industry's own propaganda. Yet it is still a high-risk activity to try to buy a computer from non-specialist retail stores.

Instability in the industry comes about through suppliers and manufacturers dropping out of the market without leaving users with support

for their systems. Undercapitalisation is one cause of this problem. If a supplier is highly geared, a sharp rise in interest rates can be disastrous. Even without this complication, many small computer companies have inadequate reserves of capital to survive major problems with even a single product line.

Both these difficulties can affect even the most successful of the small computer companies. Apple experienced problems when it released the Apple III and Hartley Computers was forced to stop trading temporarily in 1982 because of a combination of high interest rates, product problems and lack of capital.

Many of the most competent small business computer consultants operate as one-man operations. Unfortunately, customers rely on customised software and the provision of immediate bug corrections and enhancements. Problems arise when any one of a multitude of factors causes the consultant to cease trading — and someone else has to sort out the obscure and often undocumented software patches.

## SOLUTIONS

After experience in presenting many seminars for microcomputer users and in picking up the pieces after some unsuccessful attempts at computerisation, I believe businessmen do not need a lot of advice to successfully computerise their applications. This advice can be satisfactorily communicated in a one-day seminar — provided the seminar identifies those aspects of computerisation which are likely to require some form of external support (staff training). But businessmen need to know they need this advice and, having become aware of this need, they need to know where to get advice.

A major role of Federal and State governments must be to increase business awareness of the capa-

bilities and limitations of small computers and to provide a signposting function to guide businessmen to appropriate sources of advice. To perform this function relevant government departments must also promote themselves as sources of advice and help to small companies.

There is evidence to suggest that this role is not always adequately performed. In a Tasmanian survey fewer than one in 10 small businesses could name the State government department responsible for the welfare of small businesses.

A recommended starting point for any small company considering computerisation is a handbook published by the Federal Department of Science and Technology called Smarter Office, Stronger Firm. This booklet presents an easy to understand overview of all aspects of office automation in the small company. It also fulfills the signposting role by listing addresses of professional and specialist bodies in all States which could give further help.

## ASSOCIATIONS

Many professional associations provide support to their members on relevant developments in computing. This is generally in the form of either professional development seminars or the publication of how-to booklets. The Pharmacy Guild of Australia publishes three such booklets which provide an excellent model to other professional associations. The booklets provide sound advice on selecting and installing computers. There are sections on determining likely cost effectiveness by assessing transaction volumes, staffing levels and equipment costs.

Some professional associations, notably the Australian Computer Society, provide a computer support function to users outside its membership. The ACS has published The Small Business Computer Guide,



and State branches present seminars for small companies considering computerisation. The ACS is also preparing a register of consultants, in an attempt to identify competent practitioners and to provide a forum for users to complain about unsatisfactory work.

Apart from associations such as the ACS, the potential support role of professional associations is limited to the 20 per cent or so of small companies which qualify for membership of professional associations. Of more importance to most small companies is the accountant.

### **ACCOUNTANCY FIRMS**

Accountancy firms fall into two categories as far as computer support services are concerned: the smaller firms, which operate locally and rarely provide any computer support functions, and the "big eight" international chartered accountancy firms which are taking an increasingly high profile in computer support.

Deloitte Haskins & Sells is the most visible of these companies because of its publication *Businessman's Guide to Microcomputers*. The service it offers which is likely to be of most value to small companies is its on-site installation service. At its most comprehensive, this service offers the complete re-drafting of the customer's accounting procedures, the transfer of the new procedures to the computer system, data collation and input, and operator training. This type of service covers the most critical part of the computerisation process.

### **EDUCATION INSTITUTIONS**

The main role of education institutions is to provide short courses in equipment selection and installation, and hands-on courses in software operation. These services are provided by government institutions, such as the Colleges of Advanced Education and Technical and Further Education colleges and by private establishments specialising in computer education.

It is important that hands-on tuition

be given on the software that will be used in the business. Ideally, the tuition should also be on identical hardware, as packages are often modified to take advantage of particular keyboard features. Even small changes in keying sequences can be disorienting to users with no previous computer experience.

Until recently, the availability of hands-on tuition in accounting

consistent, interactive, hands-on approach to training which users can repeat as frequently as required at any location with a suitable computer. It has been adopted by major hardware manufacturers, such as IBM and Dec, to provide overviews of their equipment and computing basics, and by software manufacturers, such as Select Information Systems and Lotus Develop-

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***At best, tutorial software offers a consistent interactive hands-on approach to training which users can repeat as frequently as required at any location with a suitable computer.***

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software was limited by the chaotic proliferation of different accounting packages in Australia. Four packages have emerged as market leaders, at least in terms of sales volumes: IAL Charter series, Attache, Sybiz and the IMS Ascent series. Hands-on tuition in at least one of these packages is available in most cities. The privately owned Metropolitan Business Colleges in Sydney and Brisbane offer training in Attache, and accountancy firm Deloitte Haskins & Sells offers nationwide support and training in IAL and Attache.

In Tasmania, the TAFE colleges use Nec APCs and Attache. My own institution, the Tasmanian CAE, decided to buy IBM PCs and the Sybiz accounting package in an attempt to offer Tasmanian small businesses the widest possible range of hands-on tuition.

### **HARDWARE, SOFTWARE MANUFACTURERS**

Hardware and software manufacturers are introducing innovative methods while trying to bridge the support gap in the new end-user computing environment. Some methods being developed are tutorial software, hot lines and better manuals.

At best, tutorial software offers a

ment Corp, to provide training in software operation. Microsoft's Bill Gates has given a commitment that all applications software produced by his company will be sold with a tutorial software package.

Tutorial software seems to offer the best training prospects for users located away from the major urban centres, although I know of no tutorial software for accounting packages.

The toll-free telephone hot line concept was pioneered as a low-budget support alternative in the home computing market. Larger hardware manufacturers are now offering a hotline support service. Dec provides a year of free telephone support as part of the warranty on its personal computer range.

Another US development is the use of hotline support by major PC software manufacturers. VisiCorp and Digital Research offer US users a \$US150 support package consisting of a one-day community college hands-on training course and a year's telephone hotline support.

The day may soon dawn when users buy one copy of the manual to throw at the wall and one copy for best. Manuals are now split into a tutorial section and a reference section. Technical writers give the users some simple examples of what



the product can do, complete with keying sequences, before developing a complete list of all the commands. They aim to introduce a maximum of five new concepts, or words, in each manual to minimise user disorientation. Other key objectives to help users are consistency of terminology, frequent use of screen diagrams and comprehensive indexing for quick location of desired information.

Some personal computer dealers are becoming involved in training users. Parity, the largest Australian importer of IBM PCs, is about to establish a separate education division. Pre-purchase courses cover the selection and installation of equipment, while post-purchase courses offer a range of hands-on tuition in the Sybiz and Attache accounting packages, as well as word processing and spreadsheet operation.

## BOOKS

Users can find support from books on locating hardware and software, and equipment selection and installation. Some of the books I have found useful for locating hardware, software and services are: Computerworld's Redbook of Hardware, (Computerworld); Computerworld's Greenbook of Software, (Computerworld); Australian Microcomputer Handbook, (Computer Reference Guide); Software Handbook, (Computer Reference Guide);

DP Index and Software Register, (Peter Isaacson Publications); Smarter Data Stronger Firm, (Dept of Science and Technology guide to data sources, including Australian and overseas computer-based data networks).

Useful books on selecting and installing equipment are: Businessman's Guide to Microcomputers, (Deloitte Haskins & Sells); Smarter Office Stronger Firm, (Dept. Science and Technology); The Small Business Computer Guide, (Australian Computer Society).

Users requiring guidance in applying microcomputer software to typical business tasks should look no further than the range of applications books published by US company Sybex. The Power of Multiplan, Practical WordStar Uses are two books from that stable.


## CONCLUSION

This article has listed the major support problems experienced by new users of microcomputers and some of the support options currently available. What does the future hold? How will present trends in hardware and software affect user support requirements? A brief examination suggests support requirements will become less exacting because of more reliable hardware, easier to use software, and a smaller range of products.

Support requirements for software are reduced as it becomes

easier to use. Developments such as the mouse, touch screens, consistent user interfaces between packages, integrated packages and context sensitive help files are all helping to speed up the learning curve. The quality of tutorial software should improve because of research into expert systems.

Another trend which will assist the user is the gradual dominance of a small number of large hardware and software manufacturers. A smaller number of market leaders means fewer products to support so it becomes more cost effective for manufacturers and third-party companies to provide adequate support networks. These companies can also afford the large research and development costs which are essential to the development of reliable products that are easy to use (R&D is the only department in Microsoft not subject to budgetary restraints).

Regardless of how easy the software interface might become, the user still has to learn how to apply the software to particular business tasks. 

*Nigel Davies is a lecturer at the Tasmanian College of Advanced Education.*

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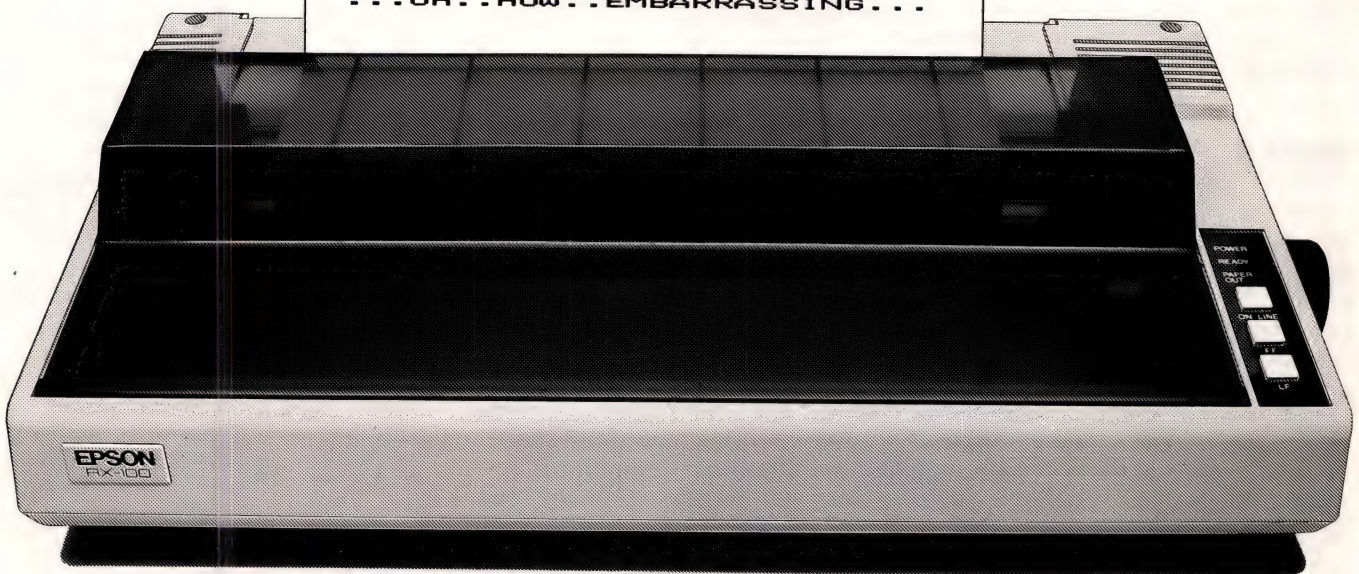
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**In his address to the CAL'83 conference at the University of Bristol in the UK, Alfred Bork, of the Educational Technology Centre, University of California, highlighted some pitfalls in current computer learning techniques and practices.**

# COMPUTERS and EDUCATION

I BEGIN with a series of assertions about computers in education, some supported later in this article.

A brief interlude considers the major advantages of the computer in learning. Finally I speculate on the future of the computer in education, arguing that it eventually will be the dominant delivery device for all areas of education. I consider aspects of what will happen.

The following statements will not be defended in this paper. I wish to make my position clear.

■ An extremely small amount of good computer-based learning material is available in any country, but much of the material, including commercially published material, is of very poor quality.

■ The standards currently in use in computer-based learning material are extremely low and are in great danger of becoming accepted as *the* standards.

■ Much of the material available is fragmentary rather than coherent collections of learning material.

■ The computer can be used in many ways in education. Philosophical discussions should not rule out certain ways. Decisions should be made on pedagogical grounds.

■ The training of teachers is a major weakness in our current systems. Most of the present inservice ways of training teachers are entirely inadequate.

■ In teaching programming at any level — primary school, secondary school, or college or university — the major emphasis should be on teaching good modern programming structure.

■ It is very unlikely that good programming courses will be taught in Basic. Basic should be avoided at all costs.

■ Authoring languages are useless in generating effective computer-based learning material.

## ONLINE TESTS

About seven years ago we developed at the University of California's Educational Technology Centre the mechanics part of an introductory physics course, based on highly interactive, graphics online tests.

The pedagogical structure of the course is like a Keller plan, personalised system of instruction or mastery course. The subject matter is divided into units; students stay with a given unit until they perform almost perfectly on tests associated with that unit.

Students choose between a computer-based or non-computer course. Those who choose computer versions take about 15,000 online exams in 10 weeks, with the computer generating each examination uniquely, offering immediate



and detailed feedback and help to students. Because of the highly relevant student assistance, students agreed almost unanimously that the quizzes were the main learning material in the course.

The technique of structuring a computer-based course around the quizzes is extremely promising for the future.

The second set of units were designed several years ago, when educational technology first employed personal computers. The main objective of the units is not to teach the subject matter but rather to bring a wide audience to a broad but deep understanding of the nature of scientific activity.

information, a spectator. To be useful to the learner, learning must be active if ideas, methods, concepts are to be internalised.

A learner, or small group of learners, working with a human tutor, can maintain such activity. But most of our current learning situations, where many people need to learn and limited funds support learning institutions, are passive.

The computer allows us to move away from spectator learning at reasonable cost and to return to interactive learning for everyone. This is not to say that the computer competes well with an extremely good tutor. We can, with computers, become more interactive than is

possible in an interactive environment. Material that is weak in interest can be changed, following a different approach.

Because of interaction we have very powerful mechanisms for improving the material. We can save student responses; these responses give us extremely detailed views of what is happening with students moment by moment. Although the computer allows this highly interactive approach, with various benefits following, not all computer-based learning material is interactive. We need to develop standards for judging the quality of interaction.

Often, first-time users, both students and their teacher, are satisfied with very weak forms of interaction, because it is such an improvement over non-interactive learning media. Thus, many of the videodisk plus computer modules produced so far, often by video people, are extremely weak with regard to interaction.

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***The curriculum modules can be adapted to different backgrounds, without any conscious realisation on the part of students. We can fill in missing background material or methods.***

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The programs are divided into modules, typically eight, each about 15 minutes duration.

Students as young as 10, as well as university students and adult learners, have used many programs successfully. Indeed, we know of no other way of teaching these difficult issues that potentially may be successful.

### **WHY USE COMPUTERS?**

Why is it that the computer is destined to be such an important factor in human learning at all levels with all types of people? Fundamentally, the major factor is **interaction**. The fact that the computer can make learning an active as opposed to a passive process implies other important consequences.

What does the learner do during the learning process? The model of learning implicit in present school based education is the passive model. Information is "delivered" by the teacher or by books, and the learner is a passive absorber of that

usually possible.

Once we accept that the computer can make learning interactive, even with large numbers of students, we see some consequences. As the computer can query the student, frequently we can determine what the student knows.

So the curriculum modules can be adapted to different backgrounds, without any conscious realisation on the part of students. We can fill in missing background material or methods.

After presentation of new ideas, the program can check using internal quizzes to see if the student comprehends. If not, the presentation can be reviewed or new approaches to that material can be offered to the student.

Thus, learning can become highly individualised, differing for each student in terms of the learning materials and the time. Another consequence of interaction is that we can determine the level of interest of the student.

While this is more difficult to do, it

### **FUTURE EDUCATION**

In this section I briefly discuss four important issues concerning the future of education, as affected by computers.

#### **1. Widespread future use of computers in education.**

It seems almost certain that the computer will be used very widely in education, not only in formal schools — primary and secondary and university — but also in training and adult education. Two issues assure this: the effectiveness of the computer in education, and the economics of computers in education.

The effectiveness follows primarily from interaction and individualisation. The economic issues are even more obvious. Computers, particularly personal computers, are declining rapidly in cost.

Furthermore, many companies, publishers, computer vendors, and new companies are moving toward developing and marketing computer-based learning material. While much confusion exists in direction, the total commercial funding in this activity is sizable and growing. These companies recognise that a



large market will develop, even though at present they are very uncertain about the nature of the market and uncertain of their role.

I refer to these two issues as the "good and bad" reasons for the widespread use of computers in education.

## **2. The future of education will not necessarily be desirable.**

It should be made clear that it is uncertain whether the computer will lead to a better or worse educational system than we have today. Like any powerful new technology, computers can be used in either desirable or undesirable ways.

Presently, the very poor computer-based learning material available is setting a very low standard. If teachers, administrators and parents continue to accept this low standard, it may become *the* standard.

So we may move toward a future with very poor ways of using the computer in education, ways which led to undesirable learning.

## **3. The key to a good educational future is an effective production system.**

The questions of how and where materials will be produced is critical in determining whether computers will aid or retard education. If we produce computer-based learning material with care, the same care

which has gone into major curriculum products such as those at the UK's Open University or the major efforts in the US in the 1960s and early 1970s, then we can expect the computer to lead to a better education system.

Much of the pressure for these changes will not come from within; educational institutions are conservative and do not change drastically without strong external pressures, including monetary ones. These pressures will become stronger, and

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***The poor computer-based learning material available is setting a low standard. If teachers and parents continue to accept this low standard, it may become the standard.***

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However, if we continue with the current cottage-industry structure, with teachers producing little odds and ends of material with little coherence and little classroom testing, we will be in difficulty. The next five to 10 years are the critical period.


## **4. Institutional change will be a critical part of the future of the computer in education.**

Given the major changes which will occur in education, we cannot expect our educational institutions to stay the same. Schools and universities will change their nature in ways which are not entirely predictable.

so we can expect institutions to change.

Distance learning activities will increase in importance, even in the elementary and secondary schools. Mastery or criterion reference modes will become more common. The time to move through educational institutions will change and will be more varied than at present. There will be many other changes.

I am predicating that the future of education is a desirable one. The chances for an undesirable future are frightening.

The only way we can move toward better educational systems is by efforts of all of us. The time for this effort is now! 

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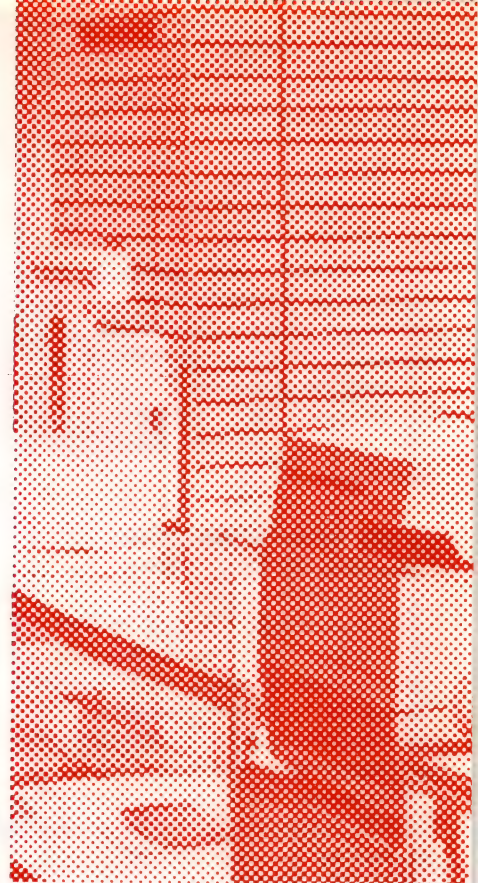
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**BUYING a microcomputer can be fraught with danger. The exercise can become an expensive blunder if you rush into buying without knowing what software and hardware you need. But as a computer buyer, you do have rights under the Trade Practices Act, and the Sale of Goods Ordinance, as Bill Dee outlines . . .**

# Your Rights as a Computer Buyer



SO YOU have negotiated the maze of equipment and misinformation to arrive at the microcomputer you think will do your job. You have chosen the machine because it has the best software options for your line of work and you can upgrade easily in future.

But just because you have the right equipment and software, you cannot rule out possible problems once you have the microcomputer running. What are your rights?

When you have problems with your "goods" it may be possible for various provisions in the Trade Practices Act or the Sale of Goods Ordinance to help you. However, whether computer software or hardware by themselves are "goods" for the purposes of these Acts is a moot point. Mr Justice Rogers of the Supreme Court of NSW in a case *Toby Constructions Products Pty Ltd v Computer Bar Sales Pty Ltd* (1983) ASC 55-265 concluded that a sale of a computer system in toto, comprising both hardware and software, constituted a sale of goods within the meaning of the Trade Practices Act and the NSW Sale of Goods Act. But there is a note of caution in the judgment.

Justice Rogers said it may be debatable whether the sale of computer software only was suffi-

cient to constitute a sale of goods within the meaning of the legislation. He said he did not want people to think that software by itself may not be "goods". An upshot of Justice Rogers' judgment is that the consumer policy branch in the Department of Home Affairs and Environment is looking at whether the Trade Practices Act should be amended to put the issue (as to whether software is "goods") beyond doubt.

In practical terms, it appears there is little doubt that the rights I'm discussing apply to a computer system (a hardware and software package), but they may not always apply to software alone.

### MERCHANTABLE QUALITY

Simply, one of your rights under law arises if the product you bought had a major defect when you bought it and you were unaware of the problem. The law says such a product is "unmerchantable" usually because there was a problem during design or manufacture, or it was damaged in some other way before you bought it.

You can get some idea of whether the product is unmerchantable if you have followed the manufacturer's instructions or if the fault was not caused by something you failed

to do, such as have the equipment maintained regularly. The equipment could also be unmerchantable if the fault was not caused by how you used the appliance, if the fault is a major and not a minor one or if it is unreasonable or not normal for you to have problems with the appliance given the product's quality and age.

If your computer gives up the ghost soon after you buy it (providing you have followed all instructions and have looked after it), it is highly probable that the computer is not of merchantable quality.

If you have had the computer for several years it is likely that normal wear and tear has taken its toll given the time and use you've had out of it. In this case, you have no rights at law.

You should remember that, generally speaking, the longer you have the item, the harder it will be to prove that the problem was there before you bought it or that it developed quickly. A manufacturer or importer is **not** liable for defects incurred after the goods left its control. The manufacturer or importer is not responsible for ill-treatment of the equipment in retail, storage or transportation to the consumer or for inappropriate installation which causes damage. It is important to





read manufacturer's instructions and make sure that you instal and use appliances according to those instructions.

## **SUITABILITY**

An important right you have under the Trade Practices Act is that goods should be suitable for a particular purpose you have made known to the seller or which is obvious from the circumstances in which the sale took place. Generally, consumers should reasonably be able to rely on the advice given by an experienced or specialist salesperson selling microcomputers. This is particularly important when you ask sales staff whether peripherals such as printers, disk drives and joysticks or programs are compatible with the processing unit itself and the extent of that compatibility.

## **SALE BY DESCRIPTION**

Microcomputers should also be in line with the description by which they are sold. If a sales brochure or point-of-sale advertising says a microcomputer will perform a certain function, it must perform that function.

Manufacturers or importers selling directly to consumers have the

same obligations as those carried by retailers. These obligations also generally apply when the computers are bought from a second-hand business (but not at an auction).

If you are confident you can establish one of these rights, you are entitled to a refund, or exchange if you wish, provided you return the computer and/or other material or write to the retailer and tell him that you intend to end the contract of sale and explain why you are returning the goods. But if you want a refund or exchange, you must return the goods or write to the retailer as soon as you discover a fault or find that the computer or peripherals or programs weren't fit for the purpose or it failed to match the description given. If you do not act quickly you may find that you are only entitled to damages. Such damages may only cover repair costs.

The most effective and practical approach is to contact the retailer first. In most cases you will get a refund or exchange of good once the problem is explained. Be firm but reasonable. Remember, most traders are only too willing to help because they have the good name of their business to look after.

Also check to see if the goods are still covered by any guarantee. If you

get no satisfactory response from the retailer, the next move is to write to the national sales manager of the company whose goods you have bought, setting out details of the problem. Give a precise description of the goods and the problem you are experiencing. Also say where you bought the equipment and when.

If you still don't get any satisfaction, you can complain to the Consumer Affairs Department in your state, the Federal Consumer Affairs Bureau office in your State, or call the bureau in Canberra on (062) 67 2756.

If you still fail to obtain satisfaction and you believe the law backs up your complaint, you may take the matter to the Small Claims Court if the sum involved is less than \$2000 (or to a higher court if it is more than that amount). Bringing an action costs nothing and you can get information from the court. You should also act reasonably quickly as you may find there are certain time limits in which you have to institute legal action. You can bring an action in the ACT against a manufacturer or importer whose head office is interstate, providing you bought the computer in the ACT.

Apart from being entitled to a



refund if you can establish your rights, you are entitled to damages and expenses attributable to the defects in the goods but you must keep these costs to a minimum. Any injury or inconvenience, cost of hiring a replacement appliance and reimbursement of reasonable labor and freight costs you may have paid to get the equipment repaired are covered.

A person who has a computer for

television or radio advertising, brochures or handbooks the manufacturer produces or something the sales staff or agents have said, you have a right at law against the manufacturer or importer.

If your choice between competing brands of appliance depends on the manufacturer's claim about his product, make sure you have it in writing — keep the advertisement or brochure so you can prove

longer use the item, a starting point would be the difference between the price you paid and the price you would get selling the appliance in its current defective condition. Where, however, you have had the goods for a considerable time and have had a fair amount of use out of them, you would first have to decide whether it is reasonable to expect spare parts to be available. If you think it is reasonable, a starting point would be the difference between the price you would get selling the goods in their current defective condition and the price of goods of the same age in working order.

Where a lack of reasonable repair facilities means there are long delays in getting your goods repaired, your compensation may include the cost you have to incur in hiring a replacement. But remember, you must keep such costs to a minimum and maintain records.

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***If your computer does not live up to anything you've seen or heard about its quality, performance or characteristics made in advertising, you have a right against the manufacturer.***

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his business could, for example, recover loss of income from not having the word processor functioning or from loss of data caused by a machine defect. But the Trade Practices Act makes provision for companies to limit their liability to, for example, repair of the good.

If you can successfully establish one of the above rights you have by law, you are entitled to the above remedies regardless of what is contained in the manufacturer's warranty. Your rights under law cannot be taken away by the written warranty.

But it will save you considerable time and inconvenience if you say you believe you have a legal right and the retailer offers to: exchange the goods; get them repaired (if you can establish your legal right you may not be required to pay labor or freight costs); get payment of the cost of replacing or acquiring equivalent goods; or pay any other costs you may have to meet, such as hiring replacement equipment.

Apart from the above rights there are two further rights you have against manufacturers or importers alone.

If your computer does not live up to anything you've been told, seen or heard about its quality, performance or characteristics made in

exactly what was claimed. If the manufacturer's representative tells you what a product will do, make a note of it. Have it in writing or have a witness. This will help if things go wrong.

## **PARTS AND REPAIR**

Under the law, a manufacturer or importer is required for a reasonable time to have a reasonable supply of parts and repair facilities for goods made since December 1978, unless he took reasonable steps to tell you about limited spare parts and repair facilities when you bought the product. What is reasonable must be judged on the circumstances in particular cases. But the law doesn't hold the manufacturer responsible if he cannot provide parts or repair facilities because of circumstances beyond his control.

If a manufacturer or importer fails to meet his obligations you are entitled to claim compensation for the loss or damage you suffer because of that. The cost of getting repairs done elsewhere is an example.

In an extreme case where you have had a major item only for a short time, and the lack of the spare part or repair facilities means you can no

## **SECURING COMPENSATION**

You should first raise the matter with the manufacturer or importer, telling him that you believe you have rights at law. See what assistance he is able to give you. The manufacturer may undertake to repair the goods or offer you a replacement. Most manufacturers are willing to stand by their products and to look after their customers when things go wrong. If this doesn't work, you should raise the matter with your State Consumer Affairs Department or the Consumer Affairs Bureau in Canberra, or bring an action for damages in the Small Claims Court.

## **REPAIRS**

If you are having repairs done to your computer, first check if the repairer is qualified. Any servicing or repairs done on your computer must be carried out with due care and skill. The job should be done in a way you would expect from a competent repairer doing that particular work. Check if repairs are covered by a warranty, and if



obtain further details of products in the editorial columns or advertisements which carry an **Enquiry number**, use the **FREE Product Enquiry Service**. Just enter the Enquiry Numbers on a Product Enquiry Card but not more than six to a card please. If making more enquiries please use a second card. Finally, complete your name and address **PLUS** Job/Title and industry codes plus micro information which is for statistical purposes only. Your enquiries will be speeded to the companies concerned for servicing.

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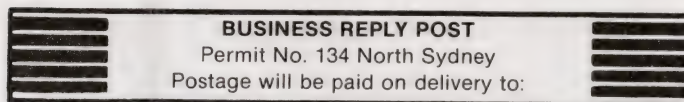
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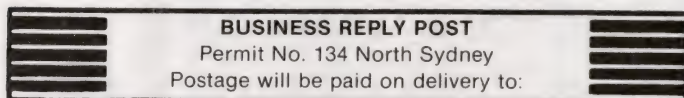
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so, whether it covers costs of parts and labor. The rights you have under the Trade Practices Act exist regardless of what is said in the warranty and may go beyond the warranty period.

Any parts supplied or used when repairing or servicing your computer must do the job for which they are needed. While a repairer may carry out a job in a workman-like manner, he may not necessarily use parts that do the job they are supposed to do. If you insist on particular parts despite the repairer's advice to the contrary, he would not be liable if they turn out to be unsatisfactory. But this should not stop you from asking the repairer to ring around to see where he can get the best price for spare parts, particularly if you aren't in a hurry to have the repairs done.

Sometimes the facts speak for themselves — it is obvious to any reasonable person. But sometimes it might be debatable between the parties. In these cases, you may need the advice of an independent third party.

But first thing you should do is discuss the matter with the repairer and see if the fault can be fixed. If this proves unsatisfactory or inappropriate, you may wish to contact the Consumer Affairs Bureau or take the matter to the Small Claims Court where you have a right to claim compensation for any loss or damage you suffered because of the fault. Such compensation may include the cost of having the services performed again and may also include the cost of any materials required to perform the service again. You may also be entitled to claim compensation for damages you incurred because the company failed to meet its obligations.

You are obliged to minimise your loss or damage. Act quickly — inform the repairer as soon as you are aware of the defect. In cases where you have paid a lot of money for the service, you will be wise to write to the company setting out exactly what you see as being wrong and the amount you want by

way of compensation backed up by quotations from other companies that can put things right.

Keep a copy of your letter and send the original by registered or certified post so you have a record of what you have done. Also remember you do not have to accept an offer by the repairer to correct the fault. Your legal right is to compensation so that you can pay someone else to do the job properly or repair the damage. Of course, in many cases the repairer may well be able to rectify the defect or perform the services again free, and you will not have to exercise your legal rights.

If a company has exclusions either in its contract or on its premises along the following lines "the company accepts no responsibility for loss or damage through any cause whatsoever", "at your own risk", "full care but no responsibility" then these exclusions have no effect at law because they try to exclude a consumer's right he has at law. Companies that mislead consumers this way risk being fined up to \$50,000. Individuals are liable to \$10,000 fines.

### NO-REFUND SIGNS

When you go into some shops you may find that they display signs such as "no refunds," "exchange only," "no refunds on sale items," "please choose carefully — no refunds or exchanges," "no refunds after seven days" or "no refunds on faulty items unless brought to our attention within 14 days of sale".

These signs try to exclude your right to a refund under the Trade Practices Act. When you buy a computer or software you have rights to a refund under the Trade Practices Act if those items are faulty, not fit for the purpose or fail to match the sample or the description given. Therefore, signs such as those mentioned mislead you or are likely to mislead you about your rights under the Trade Practices Act because they try to exclude the rights you have at law.

When you see such signs you

should tell the shopkeeper that these signs could be a breach of the law and that they do not affect your right to a refund under the Trade Practices Act when you can establish such rights. You should also contact the Trade Practices Commission, letting it know which stores carry these signs.

Signs such as "no refund or exchange unless receipt shown", or "please choose carefully, no refunds if you change your mind" can be used, as it is reasonable for the shopkeeper to ask for a receipt to prove the purchase at that shop so that you can get a refund. You are not entitled to refunds if you have changed your mind after you bought a particular item or a fault in the goods is caused by your mishandling or lack of care. **m**

*Bill Dee is an officer with the Consumer Affairs Bureau in Canberra.*

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**The National Computer Conference in Las Vegas changed its direction this year.**

**Ian Webster was there and saw that the industry has reclaimed the exhibition from the micro circus.**

# It's a Mainframe World

THE word in Silicon Valley before NCC-84 began in Las Vegas was that the computer industry has reclaimed the Conference, turning it back into America's leading industry show rather than the microcomputer circus it has been in previous years.

The computer industry is taking advantage of the exhaustion of the current IBM PC architecture, both in easy sales and in development potential, to fashion the direction of desktop microcomputing to its own needs and ends. Only Apple's Macintosh and the furious scrabbling in the supermicro market are accorded any attention as the concerns of large information systems start to dominate.

While there were a lot of PCs at NCC, most of them were hanging off bigger systems. The few new systems included the AT&T Olivetti-designed 6300, an acceptable PC compatible that has been tightly coupled with AT&T's 3B2 Unix system and should provide a useful base for the company to develop its PC strategy.

Compaq showed why it is regarded as a strong survivor in the PC compatible market with its desktop system featuring a half-height hard disk and built-in tape backup system. This company listens to users.

The Japanese manufacturers were very quiet, showing new PC compatible systems that are replacements for less PC compatible systems introduced over the past two years. Both Nec — with the APC III — and Canon showed quality color PC compatibles that should

turn up in Australia soon.

The portable market is very quiet; these machines are doing well in particular market segments but are still struggling to overcome the problems of using these systems. Most feature 16-line displays and are making progress with appropriate integrated software and useful storage. The Morrow Pivot is a much better system than I expected, compromising size to provide a good keyboard and disk storage. The Hewlett-Packard HP-110 is doing very well and threatens to become the most popular of the briefcase portables. Dulmont's globetrotting marketing manager, Terry Crews, was at NCC announcing a clutch of distribution deals in the US. The momentum behind this outstanding example of Australian microcomputer engineering has stalled because of poor local sales and the very complicated arrangements being made for its international distribution and manufacture. The second half of 1984 will be crucial to the success of the machine.

When the analysts said 1984 would be the year networking came of age, they were right. There were networks everywhere. Both Corvus and Nestar introduced SNA gateways for their PC networks and 3Com announced a networked version of Visi On as well as a complete range of file servers. There are two approaches to networks; big systems see the micro as a peripheral hanging off a file server, and small systems see connection between

microcomputers as networking. Once the big systems take control of the file servers, arguments about networks may become academic. Software designed for networks is slowly starting to become available.

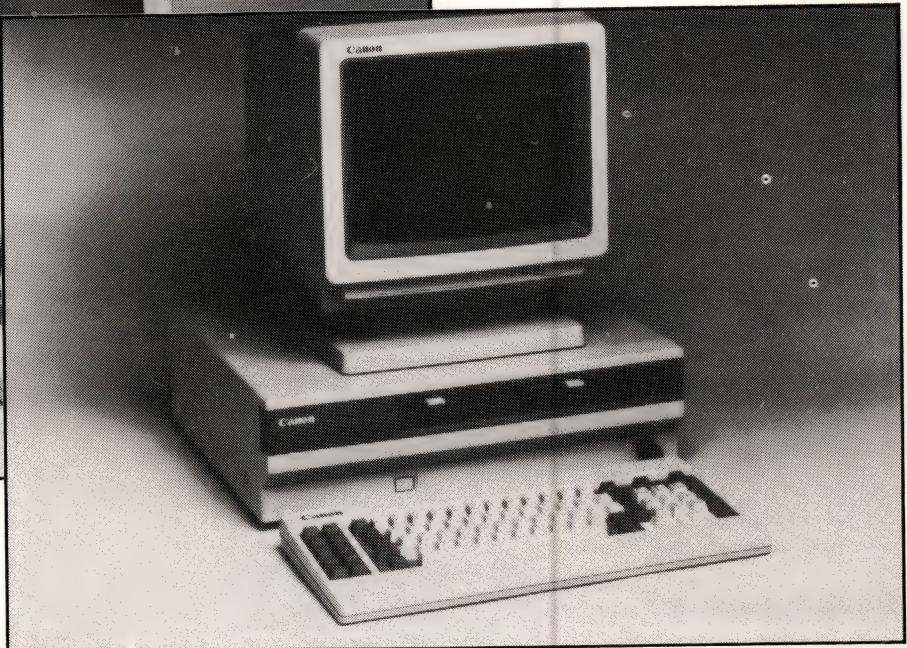
Printing technology continues to develop, with most manufacturers showing dot-matrix printers running at between 200 and 300 char/sec. These printers are also very quiet. All of the other printer technologies were on display but are still very expensive and do not offer the combination of affordable quality and ease of use that can create a mass market.

Optical disk technology was very visible and is rapidly gaining the critical mass that will bring this technology to the mass market. Both Hitachi and Panasonic demonstrated "write once" optical disk systems designed to replace microfiche systems in the office. A very small company, Grenda, was offering a \$US99 interface to connect an Apple, Atari or Commodore 64 linked to a disk unit playing the arcade hit Dragon's Lair. Although the response time was slower than the arcade version, it was quite acceptable. Optical disk can provide the information density and quality that it isn't possible to provide using home computer technology and should be the driving force behind home computing in the second half of the 80s.

There were very few software companies at NCC. The industry leaders, Microsoft and Digital Research, had almost deserted stands.



Left: Corvus introduced a hard disk drive for Macintosh.  
Below: Canon demonstrated its color IBM PC compatible.



Both had little new to offer and both are obviously struggling to get new products on the market; Macintosh software and MS-DOS Windows from Microsoft and a new Concurrent operating system for the 80286 from Digital Research.

Apple's presence at the show was a consummate political performance. The company has been under pressure to deliver on its promise of third party software for Macintosh, so it spared no expense to deliver demonstrations of more than 60 packages. The company also had prototypes of the 512K-byte RAM Macintosh, known as Fat Mac. Apple chairman Steve Jobs was a little elusive on a release date for the expanded system but it appears to be scheduled for the first half of 1985.

There is consensus among industry analysts that Macintosh is a fabulous success, but most of them do not think that the success of the system means very much except to ensure that Apple is a healthy company. The big question is whether Apple will licence Lisa technology to other manufacturers.

The best part of NCC is that the concerns and attitudes of the US industry can be experienced firsthand without the mediating influence of the American computer press.

Current concerns are focussed almost exclusively on Unix, AT&T, the Intel 80286 processor and IBM.

All sides of the Unix debate

acknowledge that it will dominate the multi-user supermicro market. There is widespread opinion that Unix is not and cannot be turned into a single-user operating system of any consequence. AT&T acknowledges that Unix is too big and unfriendly at present for single-user environments but says that it intends to build a single-user version that will not only be smaller but will include windows, icons and color.


While the supermicro manufacturers are committed to Unix, AT&T makes them very nervous. The concern is that AT&T's strategy is to promote Unix as an open system to encourage the development of the market and particularly the development of application software, then to start to close the system once the market is committed. AT&T denies that this is its intention, claiming that it can make cheaper and better Unix systems than anyone else and will compete on this basis. "We will optimise our silicon to the molecular level to support Unix," is their claim.

These statements do little to reassure the supermicro manufacturers. In Australia, where AT&T doesn't have a presence, it is difficult to appreciate the dread and uncertainty that the entry of the company into the computer market has caused.

On the other side is IBM. The

company is closely linked to the future of the Intel 80286. This processor is seen as the foundation of a new generation of multitasking, multi-user desktop microcomputers that will integrate the microcomputer into the corporate information system. New machines from IBM later this year will establish the market, which will be the growth area for the next few years.

Multitasking is seen as the essential requirement for these systems which will be powerful enough to be tightly coupled to large mainframes and to operate as standalone multi-user office systems. Incidentally, the system is also expected to run as a networked file server under Microsoft MS-DOS 3.0.

Perhaps the best insight at NCC was provided by industry analyst Portia Issacson. She said she had been asked to investigate the Japanese penetration of the US microcomputer market. She discovered Japanese manufacturers had 5 per cent market share in 1983. Not satisfied with this, she decided to calculate the total value of Japanese components sold in systems in 1983, including chips, peripherals and systems. She says that, in 1983, 31 per cent of the value of microcomputers sold in the US was Japanese in origin. It's called the softly, softly strategy. 



# SYSTEMS

## Sales manager

A COMPUTER system with programs specially developed for sales and marketing departments has been released by 77 Systems (Australasia). The system using the Seiko Series 8600 business computer, is designed to facilitate the day-to-day running of a sales department including planning, recording, individual product sales results, follow-up and analysis of tenders and quotations, as well as long-range sales budgets. It can also supply details of salesmen's performances, by individual and by territory, including interstate operations.

**Further information:** 77 Systems (Australasia), 82-86 Pacific Highway, St Leonards, NSW 2065. Tel: (02) 434 5577.

**Enter H546 on Enquiry Card**

## Phototypesetter

ITEK Graphic has released the Digitek phototypesetter in Australia. The basic one-terminal, one-typesetter configuration is upgradable to a distributed multi-terminal system. CP/M software and data communications options allow the system to expand even further. Digitek is suited to produce weekly publications, small daily newspapers, specialty publications and in-house newsletters. It could also be used by government and education bodies, and by commercial printers. The system, which uses fibre optics, can set copy at about 100 lines a minute. Fonts are available on floppy disk, and up to 40 typestyles can be accessed at one

time. There are 18 type sizes, ranging from 5pt through to 72pt. **Further information:** Itek Graphic Products, 308 High St, Kew, Vic 3101. Tel: (03) 862 1733.

**Enter H547 on Enquiry Card**

## Adam's here

CBS Electronics has announced the release of the Adam home computer in Australia. The Adam package has 80K-bytes of RAM, a digital storage pack system and daisywheel printer and keyboard. The system will sell for \$1250 with games console, or \$995 without. The multi-track formatted cassettes can hold up to 500K-bytes of memory. The Adam can work as both an electronic typewriter or as a word processor at the flick of a button. The printer prints at 120 words/min.

**Further information:** CBS Electronics, 11 Hargrave St, East Sydney 2000. Tel: (02) 339 0255.

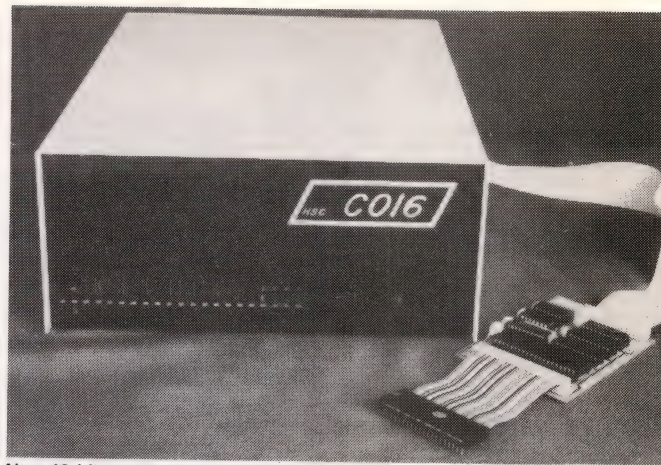
**Enter H551 on Enquiry Card**

## Datasave to rescue

ADE has announced the availability of the Datasave 80 multi-user computer system, manufactured in the US by Intelligent Systems. Based on Z80A architecture, the Datasave 80 has a CP/M operating system and can support up to eight users. The system provides 64K-bytes of RAM for each user with an additional microprocessor handling disk functions.

**Further information:** Anderson Digital Equipment Pty Ltd, 14 Whiteside Rd, Clayton, Vic 3168. Tel: (03) 544 3444.

**Enter H569 on Enquiry Card**



New 16-bit coprocessor is suitable for most Zip microcomputers.

## Co-power's here

COMPUTER Transition Systems is offering a 16-bit coprocessor system which will attach to almost any Zip microcomputer which runs CP/M 2.2. The main circuit board contains either an 8086 or a 6800 processor and 256K-bytes of parity checked RAM, running at 6MHz. MS-DOS 2.11 or the CP/M-68K operating system is supplied with the hardware. Included is Digital Research's C compiler and RAM disk software. No software customisation other than a simple INSTALL program is required.

**Further information:** Computer Transition Systems, Box 4553, Melbourne, Vic 3001. Telephone: (03) 818 7290.

**Enter H549 on Enquiry Card**

## Mini Conqueror

CPM Systems has announced the release of the Mini Conqueror which is only 5 x 6 x 12in size. The system has 64K-bytes of RAM, two 5¼in disk drives with 780K-byte capacity expandable to 3.2M-bytes, two RS232 serial

ports and one Centronics port. The Mini Conqueror comes bundled with CP/M 2.2 and utilities, Business Master II accounting and Prototype typing tutor-software. All standard CP/M compilers are available for the Z80A machine, and these include Fortran, Cobol, C Basic, M Basic and BDS C. The 24 available software packages include word processing, accounting and budgeting.

**Further information:** CPM Systems, 505 St Kilda Rd, Melbourne 3004. Tel: (03) 267 7829.

**Enter H550 on Enquiry Card**

## Just cruising

RADO Enterprises has released a series of marine navigation programs for the Sharp PC 1401 pocket computer suitable for coastal and open sea navigation. The programs are claimed to be simple to use through step-by-step prompting, to eliminate all plotting in celestial and coastal navigation calculations and automatically correct for current vectors, compass variation, and leeway. Co-ordinates are entered and displayed in degrees, minutes and tenths. A plug-in printer provides hard copy. The product is available in three versions: pre-programmed computer with cassette program tape, the computer with printer or computer, printer and cassette tape unit.

**Further information:** Rado Enterprises, 4/14 Hunter Ave, Labrador Qld 4215. Tel: (075) 32 0527.

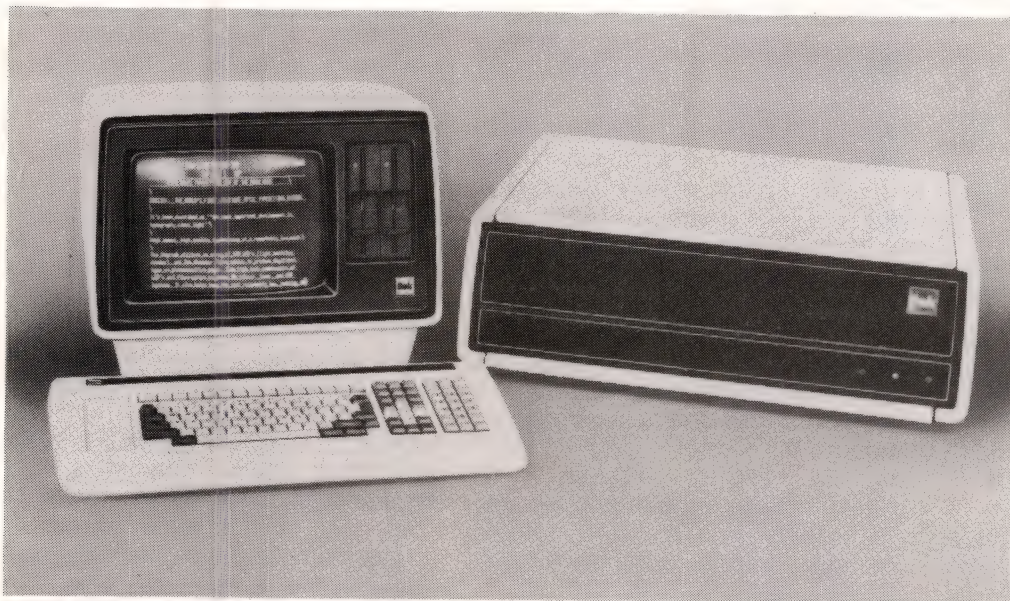
**Enter H548 on Enquiry Card**

## Executive power

A 10M-byte internal disk is available in a new model of the Executive 816 briefcase computer. A 16-bit (8088) processor, 256K-byte upgrade is now available which will allow all CP/M software to run.

**Further information:** Amust Computer (Aust) Pty Ltd, 50 Keys Rd, Morrabb, Vic 3189. Telephone: (02) 553 3755.

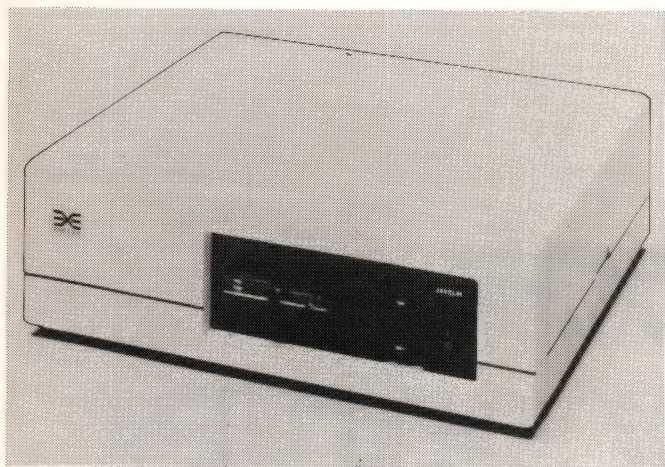
**Enter H552 on Enquiry Card**



Digitek phototypesetter — it can act as a standalone micro, too.



# PERIPHERALS



Emulex Javelin mass storage subsystem.

## "Emu" flock

EMULEX Corporation has introduced the Javelin, a SCSI-protocol desktop mass storage subsystem which connects through an independent host adapter to a variety of machines including Dec QBus and Unibus and Intel Multibus CPUs, as well as the IBM PC, XT and compatible microcomputers. The basic chassis contains power supply, cooling fan, controller boards and a choice of two 5¼in Winchester disk drives, or one disk drive and one ¼in streaming cartridge tape drive for storage/backup. Disk capacities range from 46M-bytes to 140M-bytes (unformatted). Four different plug-in Emulex host adapter cards act as intelligent interfaces between the Javelin SCSI interface and the appropriate CPU bus structure, including the UC02 and UC12 for the QBus and Unibus, respectively, the MB01 for the Multibus and the new IB01 host adapter for the IBM PC, XT and compatible microcomputers. This is supported by Emulex for MS-DOS 2.0 and CP/M-86.

**Further information:** Emulex Corporation, Suite 3, 175 Rowe St, Eastwood 2122. Telephone: (02) 858 4833.

**Enter H536 on Enquiry Card**

## Tape standard

TALLGRASS Technologies has signed a standardisation agreement to promote a new industry-standard recording format for ¼in tape cartridge drives used in personal computers. Designed by Tallgrass Technologies and named PC/T-11 (personal computer/tape format), the new format allows ¼in cartridge drives used with PCs to offer 60M-bytes

of formatted storage on a standard DC-600A cartridge tape. Hewlett-Packard and Tallgrass next developed an enhanced version of the PC/T-11, designed primarily for use with high-capacity fixed-disk drives. PC/T-11 has full record-update capabilities with individual track directories for easy data manipulation. Users can back up individual files in a start/stop mode or copy total disks on to tape using a quasi-streaming mode. Tallgrass also expanded its range of personal computer compatibility to include Eagle, Panasonic JB-3000, Olivetti M24 and the TeleVideo PC. Originally designed to interface only with the IBM PC and XT, Tallgrass devices are already fully compatible with Texas Instruments, Columbia and Corona PCs.

**Further information:** Tallgrass Technologies, Suite 12, 50 Great North Road, Five Dock, NSW 2046. Tel: (02) 712 2010.

**Enter H537 on Enquiry Card**

## Mini drives

ELECTRICAL Equipment Limited has released two new disk drives from Teac: the FD-30A, a compact 3in drive, and the FD-35 series of four models 3.5in micro-floppy disk drives. The Teac FD-30A is said to be plug compatible with industry standard 5¼in floppy disk drives. The Teac FD-35 series offers capacities from 250K-bytes to 1M-byte and is said to be interfaced with 5¼in floppy disk drives. Electrical Equipment Limited also released a new color printer from Uchida, the Model CP-1018, which combines dot printing technology with a modern version of platen inking. It features up to 180 characters per second in high speed mode and

versatile full graphic capability, as well as five character fonts and special characters for eight national alphabets. The high density mode uses a 13 x 17 dot matrix for legibility while proportional type font gives the appearance of typeset variable spacing. The CP-1018 features seven standard colors (black, violet, blue, green, red, aqua and yellow).

**Further information:** Electrical Equipment Limited, 192 Princes Highway, Arncliffe, NSW 2205. Tel: (02) 699 9666.

**Enter H538 on Enquiry Card**

## Kodak floppy

AMPEC Electronics has released Kodak's new 3.3M-byte floppy disk drive, a half height 5¼in drive operating on 192 tracks per inch, double sided, and able to read (not write) all 96 and 48 tpi diskettes. The bit transfer rate claimed is 500K bit/sec, making the unit suitable for Winchester backup. Other features include track following servo system and track-to-track access time of 3 milliseconds. The mean time before failure is 10,000 hours.

**Further information:** Ampec Electronics, 21 Bibby Street, Chiswick NSW 2046. Tel: (02) 712 2466.

**Enter H539 on Enquiry Card**

## Better mousetrap

THE TCG Group has released the Micro Digi-Pad from US GTCO Corporation. A low cost (starting at \$650) flexible data input device, the Micro Digi-Pad comprises a compact tablet in notebook or sketchbook size, a cursor shaped to fit the hand and a stylus. By moving the stylus or cursor over the tablet a crosshair will move proportionately on a video screen. While the user watches the

screen, menu functions may be selected, objects moved or pictures drawn. Absolute X-Y co-ordinate entry suits the Digi-Pad for entering existing graphic data. Dual serial ports allow another peripheral (printer or plotter) to be chained on to the digitiser.

**Further information:** The TCG Group, 30 Balfour Street, Chipendale, NSW 2008. Telephone: (02) 699 8300.

**Enter H540 on Enquiry Card**

## Bigger byte

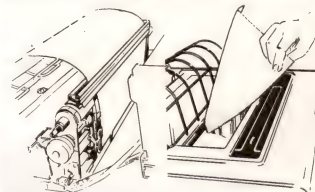
RAKON Computers has announced a 40M-byte Winchester disk option for its Sage IV multi-user, multi-tasking systems. Up to four of the new disks can be run, giving a total storage capacity of 160M-bytes.

**Further information:** Rakon Computers, 114 Alexander St, Crows Nest, NSW 2065. Telephone: (02) 43 1351.

**Enter H541 on Enquiry Card**

## Tear-off added

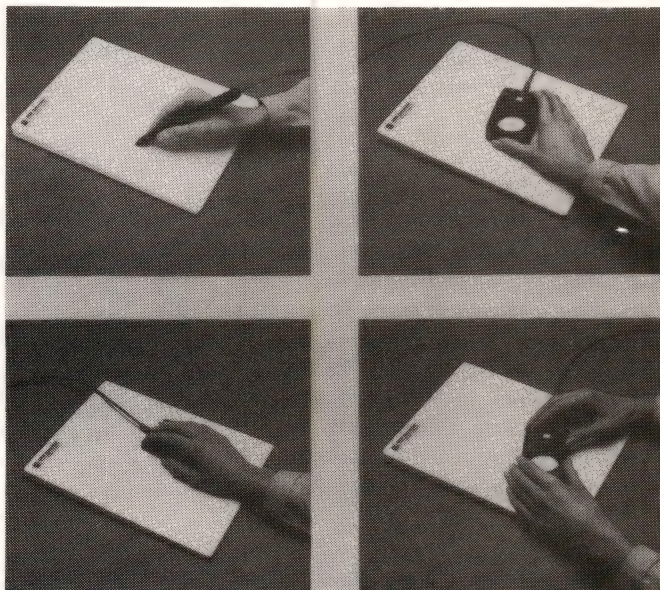
FACIT printers have been equipped with a new tear-off feature for production of labels, invoices and



tickets. The FACIT 4542 (two color) and 4544 (four color) printers have vertical pushing paper tractors. A sharp edge in the glass window assists in tearing off printed forms.

**Further information:** EAI-Electronic Associates Pty Ltd, 48 Atchison St, St Leonards, NSW 2065. Tel: (02) 439 7522.

**Enter H542 on Enquiry Card**

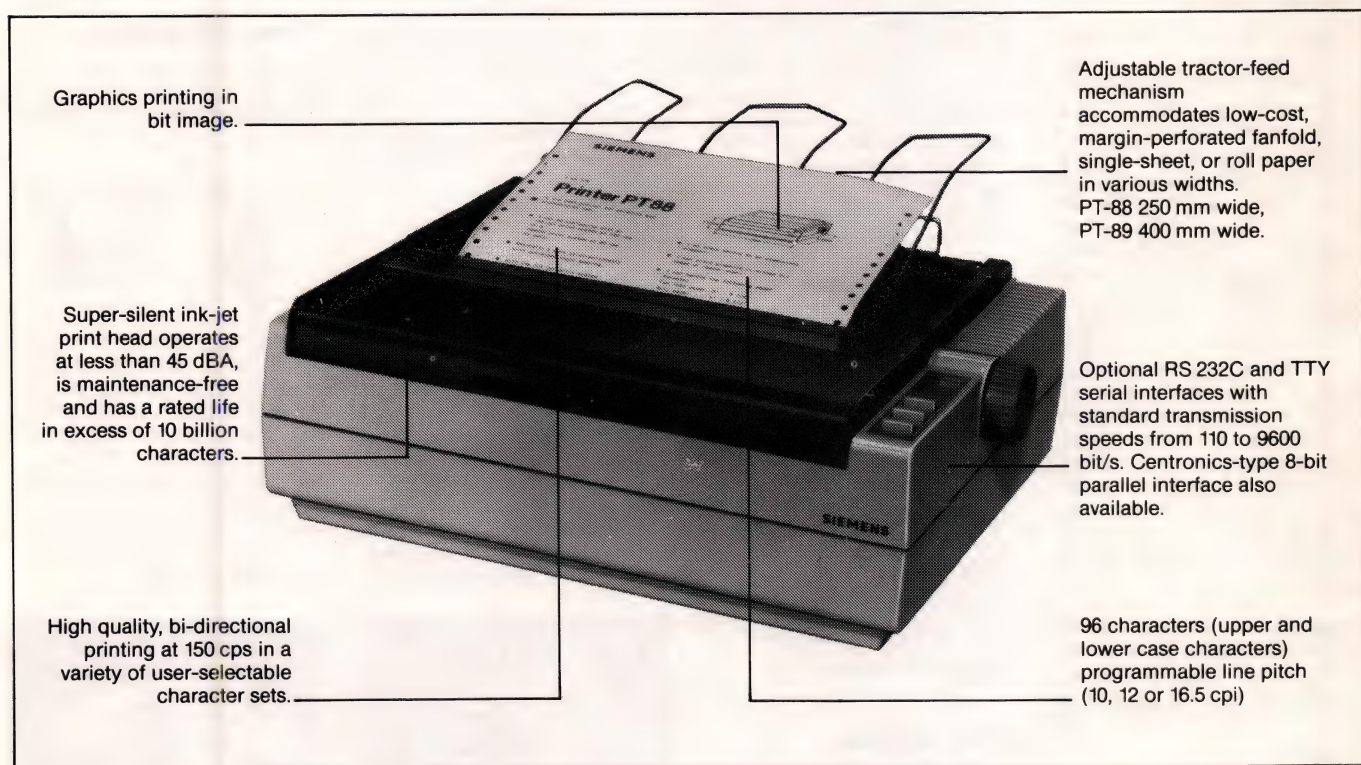


Micro Digi-Pad sketchbook tablet.



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## The silent ink-jet printer from Siemens

Enter H021 on Enquiry Card



# SOFTWARE

## Cad Quest



QUEST Automation has been appointed Australian agents for the computer-aided drafting packages from T & W Systems, of the US. The packages include the VersaCAD system with versions for the IBM PC and XT (or compatibles) and the Hewlett-Packard 200 Series. An Apple version called CADApple is also available. The primitives of the systems offer lines (several types), arcs, circles, ellipses, bezier curve fitting and polygons. Editing features, zoom facilities for detail work and automatic dimensioning and a user-definable grid system are provided. Up to 250 levels can be stored on one drawing for overlay structures and any part of the drawing can be "windowed" and stored or plotted. Symbol libraries can then be added to the drawing, copied, rotated or imaged. Input is from joystick, digitiser or keyboard and co-ordinates can be entered absolute, relative or polar modes. Output can be to either Hewlett-Packard or Houston pen plotters in A4 through to A0 size.

**Further information:** Quest Automation Pty Ltd, 47 Falcon St, Crows Nest, NSW 2065. Tel: (02) 436 3988.

**Enter H553 on Enquiry Card**

## DataFlex for PC

A NEW version of DataFlex specifically for the IBM PC and compatibles has been released in this country by Australian Microcomputer Solutions. DataFlex is a hardware independent, transportable software system which combines the features of a programming language, relational database manager, report generator and associated utilities into a single unified package. The new PC version will run on the IBM PC, XT and other MS-DOS-based systems that are compatible with the IBM memory map. The new version has significantly improved overall speed of opera-

tion, and supports the IBM color monitor, codes can be put into the SETSCREEN utility that allow you to control the background, foreground and data display colors on a system configured with a color monitor. It removes the 8K-byte file size limit, and has a completely revamped QUERY program using either "mouse" or cursor-driven user interface. Updates are available for existing systems.

**Further information:** Australian Microcomputer Solutions, "Curragab House" 248 Latrobe Tce, Geelong, Vic 3220. Telephone: (052) 21 1085.

**Enter H554 on Enquiry Card**

## New SCOPE

DICKER Data has announced the release of a powerful new version of Screen Oriented Program Editor, SCOPE 2. Features include: use on any Vector 4 or Vector SX system, virtual text handling, split-screen concurrent file access, function key commands for the Vector 4 and horizontal screen scrolling.

**Further information:** Dicker Data Pty Ltd, 78 Captain Cook Dr., Caringbah, NSW 2229. Tel: (02) 525 2122.

**Enter H556 on Enquiry Card**

## Liberator

INTERACTIVE Applications has announced The Liberator, a program which allows data to be transferred from its Charter Series packages on to a variety of productivity tools including Lotus 1-2-3 and MultiPlan. Using The Liberator, users can convert the Charter Series data files to a format able to access programs such as Lotus 1-2-3, MultiPlan, dBase II, WordStar, Mars, CalcStar, MailMerge and DataStar. Each Charter Series package sells for \$750. The Liberator costs \$250.

**Further information:** Interactive Applications Ltd, Unit 17, Norberry Tce, Cnr Pacific Highway and Berry St, North Sydney, NSW 2060. Tel: (02) 920 1377.

**Enter H557 on Enquiry Card**

## MS releases

MICROSOFT has released two new packages in Australia, one for the IBM PC, the other for Apple's Macintosh. Microsoft Project is a business application program which works like a spreadsheet on the PC. It can be

used to create schedules, allocate resources and budget costs, using the critical path method. File, Word and Chart, for the Mac were displayed at the recent PC 84 Show in Melbourne. File is an electronic filing system. Chart lets users graphically explain ideas by allowing them to choose from more than 40 different chart formats. Word is Microsoft's word processing package which is being developed for the Mac.

**Further information:** Microsoft Pty Ltd, PO Box 98, Terrey Hills, NSW 2064. Tel: (02) 450 2522.

**Enter H558 on Enquiry Card**

## Canon aid

CANON has just released a new job-costing program written in Canon Basic. The program, written for Australian conditions, is available for the AS-100. The package is able to run either as standalone or fully integrated with other software modules, including debtors, creditors, inventory, payroll and general ledger. Canon is also providing a comprehensive bill-of-materials software package designed for Australian industrial conditions.

**Further information:** Canon Aust Pty Ltd, 37 Waterloo Rd, North Ryde, NSW 2113. Telephone: (02) 887 0166.

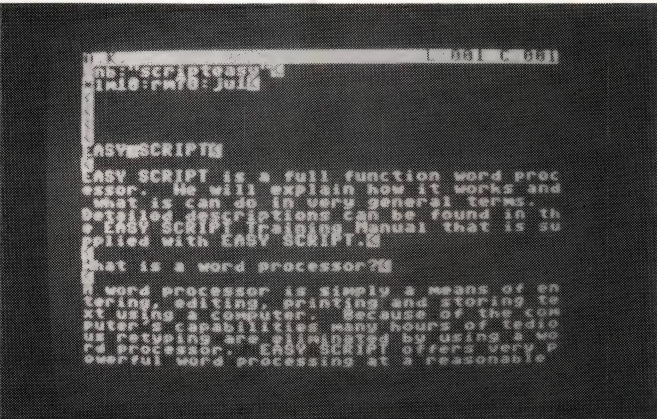
**Enter H559 on Enquiry Card**

## Easy packs

COMMODORE Business Machines has released two new programs for the Commodore 64 — Easy Script 64, a word processing package, and Tic Tac Show, an animated quiz show game. Easy Spell 64 includes a 30,000-word spelling checker, while Tic Tac Show covers 14 basic lessons, can be played by one or two players and teaches new facts and concepts about the real world.

**Further information:** Commodore Business Machines Pty Ltd, 5 Orion Rd, Lane Cove, NSW 2066. Tel: (02) 427 4888.

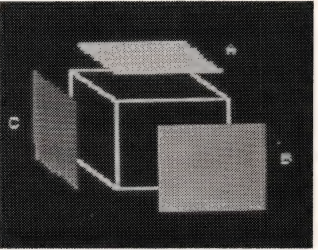
**Enter H555 on Enquiry Card**



Easy Script 64 includes a 30,000-word spelling checker.

## Machine tutorial

HOLT-Saunders Pty Ltd has released a machine language tutorial for the Commodore 64, written



by Paul Blair, an internationally published author and contributor to Australian Commodore Magazine. The tutorial comes complete with either disk or cassette (\$34.95 and \$32.50, respectively). It includes a demonstration program with examples of short machine language routines.

**Further information:** Holt-Saunders Pty Ltd, 9 Waltham St, Artarmon, NSW 2064, Telephone: (02) 439 3633.

**Enter H560 on Enquiry Card**

## Disk-to-disk

LOG has announced the release in Australia of several products for the IBM PC and Dec's Rainbow. WPS-80 is a CP/M-80 word processor for the Rainbow, the Decmate II and VT180 computers. The \$395 package is key-stroke compatible with the dedicated WPS word processing system running on the Decmate II. Import! is a disk-to-disk file transfer utility, also for the Rainbow. Import! reads and copies CP/M and MS-DOS files to a formatted Rainbow disk from more than 25 different disk formats. It costs \$199. 80Mate, a CP/M emulator, and 80Term, a terminal emulation program, allows CP/M-80 programs to run on an IBM PC without extra hardware. Xeno-Copy PLUS is the only currently available utility under MS/PC-DOS that transfers files between different operating systems. It is available for the PC XT and most compatibles for \$279. Xeno-Disk Production System for



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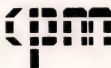
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**Further information:** Logo Management Information Centre Pty Ltd, 100 Miller St, Nth Sydney 2060. Tel: (02) 929 8508.

**Enter H561 on Enquiry Card**

## Window on Sirius

BARSON Computers has released Concurrent CP/M with Windows for the Sirius microcomputer. A real-time monitor keeps all files and tasks separated, schedules all internal timing and manages the logical I/O. The multi-user capability allows up to two terminals to be connected.

**Further information:** Barson Computers Pty Ltd, 335 Johnston St, Abbotsford, Vic 3067. Tel: (03) 419 3033.

**Enter H562 on Enquiry Card**

## Turbo accounting

CUSTOMSOFT Developments has released multi-user account-

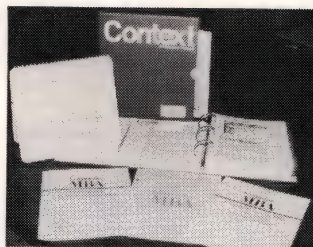
ing and business management packages designed for any computer running the TurboDOS-80 operating systems. They include a balance-forward debtors and stock control combination catering for the wholesale import/distributor type of company; a multi-company or multi-divisional general ledger system; an open-item creditors control system and a payroll processing package handling automatic PAYE tax calculations, pay envelope printing, coinage analysis as well as group and payroll tax calculations.

**Further information:** CustomSoft Developments Pty Ltd, Suite 1, 1394-6 Pacific Highway, Turramurra, NSW, 2074. Telephone: (02) 449 5388.

**Enter H563 on Enquiry Card**

## Corporate package

CORPORATE MBA, released by Intelligence (Aust), enables corporate users of IBM PCs and compatibles to carry out complete information management. The \$1200 package integrates



electronic spreadsheet, word processing, information management, telecommunications, business graphics and forms creation. Corporate MBA's screen is divided into a number of rows and columns, forming a grid of 95,000 cells. These cells can hold numbers, formulas, up to three pages of text each, as well as downloaded telecommunications data. Users can enter data, create tables and models, write, calculate and recalculate formulas. It is simple to move from one part of the spreadsheet to another, duplicate cells or compress the contents of many cells into a single, easily manipulated cell. Files can be "exported" to or "imported" from other packages such as WordStar.

**Further information:** Intelligence (Aust) Pty Ltd, 4th Floor, 204 Clarence Street, Sydney, NSW 2000. Tel: (02) 267 1711.

**Enter H564 on Enquiry Card**

## Persuade is revealed

MICRO Nationwide has announced the release of a book and computer disk program for students aged nine to 15. The 30-page book, And Now The Message, is designed to enable students to understand the types of propaganda techniques used in advertising and persuasive writing. Price is \$69.

**Further information:** Micro Nationwide Pty Ltd, 139 Bungan St, Mona Vale, NSW 2103. Tel: (02) 99 1772.

**Enter H565 on Enquiry Card**

## New links

DIGITAL Research has introduced StarLink, a combination of hardware and software that expands an IBM PC into a multi-user system. The new product was launched at the 3rd Personal Computer Show in Melbourne in July. The StarLink system can connect up to four terminals to a PC, allowing users to share files, software and data simultaneously. StarLink consists of a micro-processor and RAM on an add-on board.

**Further information:** Arcom Pacific, 252 Abbotsford Rd, Mayne, Qld 4006. Tel: (07) 52 9522.

**Enter H566 on Enquiry Card**

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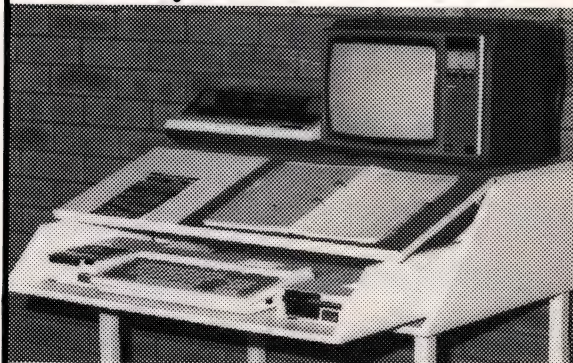
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# COMMUNICATIONS

## Joint testing

WANG Laboratories and AT&T Information Systems have completed initial joint capability testing of Wang equipment with AT&T's Dimension System 85. The test confirmed the suitability of System 85 as a data switching device for available local and remote communications among Wang VS, PC, OIS and 2200 product families. During the tests, Wang systems using standard RS232C interfaces for asynchronous, synchronous, and Wang-developed protocols were able to exchange data over twisted pair telephone wiring. As the next step in their agreement, the companies are jointly planning to test AT&T's digital multiplexed interface between System 85 and Wang Office Automation products.

**Further information:** Wang Computers Pty Ltd, 10 Paul St, Milsons Pt, NSW 2061. Tel: (02) 436 3477. Enter H500 on Enquiry Card

## Datacraft modem

DATA-CRAFT has released the 520 Baseband modem, intended for short-distance distribution of either synchronous or asynchronous data at rates up to 19.2K-bits/sec in point-to-point or multi-drop configurations. The modem operates over four-wire twisted pair cable of various gauges with the transmission distance being dependent on data rate and wire gauge. The 520 is compatible with the Datacraft 5020 and 5020T short-haul modems and is available in desktop or standard 19in rack mount versions. The desktop version costs about \$555 after tax.

**Further information:** Datacraft (Aust) Pty Ltd, Maroondah Highway, Croydon, Vic 3136. Tel: (03) 726 9911.

Enter H501 on Enquiry Card

## Gateway family

CASE Communication Systems has introduced a new family of gateway devices which connect different types of X.25 networks and also interconnect different services within an X.25 network. The Multi-Com has two models, with future models planned. Model 2 translates numbers called between private and public X.25 networks. This enables the interconnection to Telecom's Austrpac or OTC's Midas public packet-switching systems from private X.25 networks using different numbering systems. The other Multi-Com 25 available is the Model 4 which interconnects permanent-virtual circuits with switched-virtual circuits within a network.

**Further information:** Case Communication Systems Ltd, 1-3 Rodborough Rd, Frenchs Forest, NSW 2086. Tel: (02) 451 6655. Enter H502 on Enquiry Card

## PC preferences

DATA Sat and Sourceware have recommended Data Sat's World Modem and Micro Stuff's Crosstalk XVI as their preferred IBM PC communications package combination where 24-hours access of the PC is required. Crosstalk XVI is an intelligent data communications terminal and file transfer program incorporating error correction and password security. Crosstalk XVI employs the Intelligent Data Link Controller in Data Sat's World Modem to accomplish automatic answering and disconnection or manual connection and simple menu driven keyboard commands.

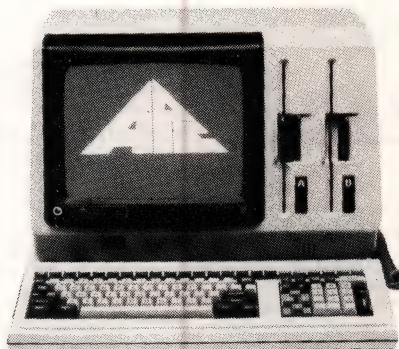
**Further information:** Data Sat Australasia Pty Ltd, 522-524 The Kingsway, Miranda, NSW 2208. Tel: (02) 525 6688.

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Datacraft 520 short-distance modem.





Hewlett-Packard and BBJ officers sign the equity agreement.

## BBJ sells to HP

HEWLETT-Packard Australia has announced it has completed equity negotiations with leading local software house and OEM, BBJ Computer Services Pty Ltd. HP's equity interest of 27.5 per cent follows a long relationship with the HP 3000 series computer during which time BBJ has become one of HP's largest outlets. BBJ has developed a wide range of software for HP equipment. BBJ has branches in Brisbane, Sydney, Melbourne and Perth, and overseas offices in Singapore and Kuala Lumpur.

**Further information:** Hewlett-Packard (Aust) Ltd, 31-41 Joseph St, Blackburn, Vic 3130. Tel: (03) 895 2895.

Enter H518 on Enquiry Card

## Sydney Software

SOFTWARE Corp of Australia has established a sales and marketing office in Sydney. Located in the Edgecliff Centre, the office is managed by David Sokol, the recently appointed NSW marketing manager. Software Corp of Australia distributes software primarily for the IBM PC and other 16-bit microcomputers. The software is mainly directed at corporate users, and is distributed through computer dealers in all States.

**Further information:** Suite 501, 203 New South Head Rd, Edgecliff, NSW 2072. Telephone: (02) 328 7074.

## Optical rights

THE Du Pont Co has bought rights to use optical disk technology from Storage Technology Corp. It plans to be the major outside supplier of optical disks

to Stotech worldwide. Under terms of the agreement, Du Pont will use the technology to manufacture optical disks for Stotech's new model 7640 disk drives. Du Pont also may use the disk technology independently for purposes other than Stotech's disk drives.

## Sole distributor

MICROSOFT has appointed Software Source Pty Ltd, sole NSW distributor for its range of micro-computer software. Software Source will be responsible for three areas: Supplying dealers and independent software vendors with Microsoft products, downloading transportable software to alternative disk formats so that the products are available for a larger range of hardware and operating an authorised Microsoft training centre to dealers and users.

**Further information:** Software Source, 349 Oxford St, Bondi Junction, NSW 2022. Telephone: (02) 389 6388.

Enter H568 on Enquiry Card

## Incentive grant

THE Computer Power Group is to receive \$100,000 under the ACT Industry Incentive Scheme to help establish a centre for applied research and development. The Computer Power Group's head office is in Melbourne and other offices are in Sydney and Perth. A new office is also being opened in New York because of a financial involvement with News Corp Ltd.

## Kingdom graduates

THE Sydney computer technology company Kingdom Pty Ltd has added six recent university graduates to its staff in a matter of weeks. The new employees are Australian, Fijian, Malaysian and Vietnamese. Each employee has been given a special assignment

in line with the company's development.

## Pick of mergers

GENERAL Computing Services of Melbourne and Perth has merged with Pick Computer Systems Pty Ltd of Sydney, rationalising the distribution and marketing of the Pick-based Ultimate computer systems in Australia. Melbourne and Perth offices will remain while the Sydney office will be consolidated at the new General Computing address, 10 Bridge Street, Pymble, NSW 2073. Tel: (02) 449 3888. Acquisition of this merged group by the Ultimate Corp of the US is awaiting Foreign Investment Review Board approval.

## Computer youth

THE Federal Department of Education and Youth Affairs has acquired an Amdahl 470/V8 computer to re-equip and redesign its computer-based student-assistance schemes. The 470/V8 was previously leased by the Department of Veterans Affairs and the acquisition by the Department of Education and Youth Affairs has retained the Commonwealth's equity in the computer.

## Case buys Rixon

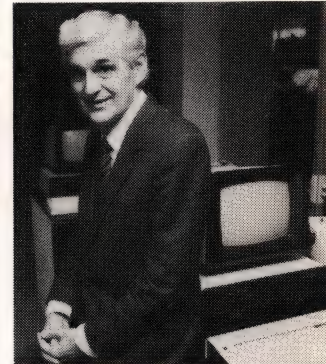
COMPUTER and Systems Engineering plc, to which the Australian-owned Case Communication Systems is affiliated, has completed its acquisition of US data communications manufacturer Rixon Inc. The acquisition, valued at \$US32.5 million, was financed by the placement of 3.5 million extra shares in Case on the London Stock Exchange. Since announcing its conditional purchase agreement with Rixon parent, Schlumberger Ltd, Case has announced record profits of \$US4.1 million for the year to March 31, on a 58 per cent rise in turnover to \$US37.2 million.

**Further information:** Case Communication Systems Ltd, 1-3 Rodborough Rd, Frenchs Forest, NSW 2086. Tel: (02) 451 6655.

Enter H520 on Enquiry Card

## Hitting the books

LANIER (Aust) Pty Ltd has donated \$250 to North Sydney's Stanton Library for the purchase of high technology books. The company recently opened new offices, including a training centre, in North Sydney.



North Sydney mayor Ted Mack at Lanier's new training centre.

## Travelling West

COMMODORE Computers has opened a new office in Perth to handle the West Australian market. The office, the first in the West for the company, is at 198 Daly St, Belmont 6104. It will be headed by Wayne Drake, a former Nec product rep from Melbourne.

## Altered state

DIGITAL Equipment Corp and Computerland have altered their business relationship to enable Digital to contract directly with Computerland franchises wanting to maintain the relationship and which are hunting down small business buyers. Both companies agree a central purchasing agreement is not appropriate at this time. But they have emphasised they are not breaking the relationship, merely "mutually altering it".

**Further information:** Digital Equipment Corp (Aust) Pty Ltd, Northern Tower, Chatswood Plaza, Railway St, Chatswood, NSW 2067. Tel: (02) 412 5252.

Enter H521 on Enquiry Card

## Apple jobs

APPLE Computer Australia has announced several senior appointments within the marketing, technical and customer services departments of the Australian head office in Sydney. Nick Padol has been appointed product manager for the Apple II family of computers.

David Browne has been appointed operations manager for Australia and New Zealand. He has been put in control of the customer support and technical support departments. Mr John Paull has been appointed market



Kingdom officer briefs new staff members.



development specialist and will be responsible for liaising and communicating with the Apple dealer network in Australia and New Zealand, and will also help with sales training in Australia. Greg Buchanan has been appointed national services manager, and will be responsible for the technical support department.

### Span appointments

SPAN Australia has appointed Ray Edwards as NSW manager for its contracting division, Span Computer Contracts. For the past four years, Edwards has been contract services manager at ICL. He was previously MDS manager at Computer Technology and has 16 years experience in EDP.

### Printronic takeover

PRINTRONIX Inc, a manufacturer of line printers, has acquired Anadex Inc, a privately owned Californian designer, manufacturer and retailer of serial dot matrix printers. The move cost Printronix \$US8 million worth of its own shares.

### Barson's next move

BARSON Computers has moved its Sydney office and has announced a number of new appointments for the office, which include Ian Gribble to the position of sales manager, Acorn products, Northern Region; Sue Hayes is dealer support coordinator, Northern Region; Cam Wayland is sales manager, Sinclair Spectrum, Northern Region and Damien Maree, dealer manager, Sirius. Lesa Townsend has been appointed MSR in Sydney. Meanwhile at Melbourne head office, Barson has promoted Stefan Wasinski to national marketing manager. Malcolm McLeod has been appointed sales manager, Southern Region, for the Sinclair



Sue Hayes of Barson.

Spectrum. Gray Farrell is manager, large accounts, for the Apricot microcomputer.

**Further information:** Barson Computers, 7-9 West St, Nth Sydney 2060. Tel: (02) 436 2588.

### Time boost

TIME Office Computers has received a grant of \$1 million from the Australian Industrial Research and Development Incentives Board. The grant will boost Time's development plans.

### Microsoft warning

MICROSOFT has warned users and potential customers to look carefully when buying Microsoft software to ensure it is authentic and not illegal copies. The company says only authentic Microsoft software can be supported by Microsoft dealers and the Microsoft hotline services.

### Eracom deal

LABTAM International, manufacturers of the Australian-designed Series 3000 range of 8-, 16- and 32-bit computers has appointed Eracom Pty Ltd as its representative in Queensland.

### Westpac invests

BUSINESS Loans and Equity Capital Ltd, a Westpac subsidiary, has recently invested in Impact Systems Pty Ltd. Under the agreement, Business Loans now holds 20 per cent of the equity capital of Impact Systems, the Hitachi Koki distributors for Australia and New Zealand.

### Venture capital

THE Portable Computer Co has become the first Australian company to receive venture capital under the MIC scheme. The company's main product is the PortaPak microcomputer. The investment in the Sydney manufacturer was made by Hambro-Grantham (MIC) Ltd.

### Arcom number

ARCOM Pacific has a new telephone number in Brisbane: (07) 52 9522. The company is still located at 252 Abbotsford Rd, Mayne, Qld 4006.

### Plum awards

THE Apricot computer has picked up three major computing awards. It has been judged the World Microcomputer of the Year, and has also picked up the UK's Business Microcomputer Award and The Sunday Times Award for the British Innovation of the Year.

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# APPLICATIONS

## Easy hardware

JOHN Danks & Sons, Hardex, Zenith Hardware and James McEwan, who collectively handle about three quarters of the hardware wholesale distribution market, are encouraging their retailer customers to streamline order/delivery operations with portable data entry. These four hardware wholesale/retail groups utilise the Telxon Portable Data



Entry Systems. Danks now has 330 Telxon units installed and more are on order. Total time for a retailer to check stock and re-order with the Telxon 716 terminals is claimed to have been cut by 1/2 to 2/3 of that required under a manual system. The battery operated lightweight units for recording, storing and transmitting remote data feature full alpha prompting messages to assist novice operators, permit visual data verification and error correction and have a memory search facility for quick reviewing of entries.

**Further information:** Telxon Australia Pty Ltd, Unit 3, 190 George St, Parramatta, NSW 2150. Tel: (02) 633 4848.

**Enter H529 on Enquiry Card**

## Water, water . . .

THE Hunter District Water Board is using hand-held computer terminals for reading water meters in a pilot study, believed to be the first of its kind in Australia. Equipment used in the project includes the Micronic 445A Portable Data Entry Terminal, which has a two-line liquid crystal display, and allows storage of up to 64K-bytes. Details of the routes the meter readers are to follow each day are "down-loaded" from a 16-bit Onyx computer into the terminals, each of which can hold about 300 accounts. At the end of the day, meter readings, special comments, details about new, broken and inaccessible meters, are "up-loaded" to the Onyx,

which can then produce a variety of reports and also select the data to be sent on to the mainframe computer for processing consumer accounts. The program has been developed by Holmes Computer Company of Canberra.

**Further information:** Holmes Computer Company Pty Ltd, 212 North Bourne Ave, Canberra 2601. Tel: (062) 48 6300.

**Enter H530 on Enquiry Card**

## Philips CAD/CAM

PHILIPS is installing modern computer aided design and manufacturing (CAD/CAM) facilities at its Melbourne production centres. The equipment is from Computervision and includes a high capability mechanical and electrical design package, good range of support software, networking capability with Dec and IBM equipment and compatibility with other installations used within Philips. The company now aims to develop a complete Computer Integrated Manufacturing (CIM) system that links CAD and CAM so Philips can produce higher quality products more quickly.

**Further information:** Computervision Australia Limited, 852 Canterbury Road, Box Hill, Vic. 3128. Tel: (03) 898 9421.

**Enter H531 on Enquiry Card**

## Training school

HUNTER Computers has established a training school where students are taught business computing on Sanyo MBC 555 microcomputers and electronic typewriters. People of all ages, from school leavers to businessmen, are given the opportunity to learn in both day and evening classes.

**Further information:** Hunter Computers, 23 Tudor St, Hamilton, NSW 2303. Tel: (049) 69 4061.

**Enter H528 on Enquiry Card**



Hunter Computers training school.

## 'Happy (data) hour'

WHEN a barman presses the lemonade key at the Village Green Hotel in Melbourne's Prahran, he is feeding data into a new system which is revolutionising management of Carlton United Breweries' own hotels. Not only is he recording a sale of lemonade, but he is checking the price, reordering, checking stock reprints, preparing bank deposits, and the daily sales summary. The system was designed by the Sydney company Business Electronics Pty Ltd. It links Kingtron TR series point-of-sales terminals, with keys for every drink, to each other and to the central G.E. Marklink terminal at CUB's head office. The application software was developed by Business Electronics and is now available to other hoteliers.

**Further information:** Business Electronics Group, 390 Princes Highway, Rockdale, NSW 2216. Tel: (02) 597 1133.

**Enter H532 on Enquiry Card**

## Grocers Co-op

THE Independent Grocers Co-operative in Adelaide has ordered another six Burroughs B20 computer systems, taking the total number bought to 30. Since Burroughs sold its first B20 to the co-operative last June the organisation has installed 15 systems in its head office and warehouse; 15 more have been installed in its members' stores. Eight now work in the co-op's cash-and-carry warehouse as point-of-sale terminals connected to a laser bar code reader.

**Further information:** Burroughs Ltd, 30 Alfred St, Milsons Pt, NSW 2061. Tel: (02) 922 9300.

**Enter H533 on Enquiry Card**

## Rigi Digi Tele

RIGI Digi is the unusual name for an unusual inner Sydney programming co-operative that is providing services to community organisations at one quarter of usual commercial fees. The co-op started its Community Computing Project with Federal wage

pause funds and two Nec APCs in Newtown in early 1983, partly to de-mystify the world of computers. The team members still hold seminars to combat cyber-phobia but concentrate on work for organisations such as the Youth Refugees Association and the Inner City Education centre apart from its community work using the two APCs for both parts of the operation seven days a week for more than 16 hours a day. The team's expertise is in mathematical physics, applied science, education and pure mathematics.

**Further information:** Rigi Digi, 204A King St, Newtown, NSW 2042. Tel: (02) 517 2615.



Workers at the Rigi Digi programming co-op.

## Insurance 'ported'

INSURANCE company C.U.I.B.S. has joined with Nec Information Systems Australia to provide computerised car insurance details for credit union members. It plans to provide the new service to credit unions throughout Australia, using the Nec 8201A handheld computer programmed with the motor vehicle insurance rates of leading Australian insurers. Credit unions will be able to key in the model of the vehicle which members wish to insure, their no claim bonus and other relevant insurance details. The Nec 8201A, using software developed by Quotel Pty Ltd, will print out the gross premium charged by each insurance company. The system will sell for \$1705. A software maintenance fee of \$250 is charged to cover the supply and updating of vehicle category lists, operator's manual and changes to the program to accommodate alterations in premiums.

**Further information:** Nec Information Systems Australia Pty Ltd, 99 Nicholson St, St Leonards, NSW 2065. Tel: (02) 438 3544.

**Enter H535 on Enquiry Card**



# MICROWARE

## Another Window

A FORMER associate editor of Australian Micro Computerworld magazine, Tony Smith, has branched out to produce a newsletter on the computer industry. The newsletter, called Computing Window, has been designed to explain to users what all the information in the computer press means. Subscription for a year costs \$115.

**Further information:** Tony Smith, PO Box 146, Essendon, Vic 3040.  
**Enter H504 on Enquiry Card**

## Disk storage

DAVKA Computer Accessories is offering low-cost plastic disk storage sheets designed to fit standard A4 binders. The storage sheets can hold two mini-diskettes each, complete with space for indexing or labelling information. They come in packs of 10.

**Further information:** Davka Computer Accessories, 92 Sellars St, Greenborough, Vic 3088.

**Enter H505 on Enquiry Card**

## Getting religion

FLETCHER DP Services has released an 85-plus page guide for church micro buyers. Micro Computers: A Guide for Christian Organisations guides buyers through selecting hardware and software and implementing the system. There is no high-tech jargon. The cost of \$7.50 covers printing and postage. Fletcher says quarterly updates will be considered if demand warrants it.

**Further information:** Fletcher DP Services Pty Ltd, 320 St Kilda Rd, St Kilda Vic 3182. Telephone: (03) 537 2811.

**Enter H506 on Enquiry Card**

## Insurance package

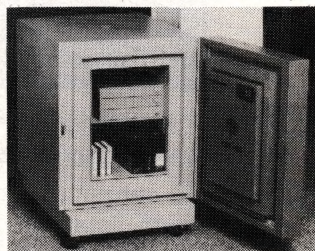
NEW Zealand Insurance has launched "Electronicsurance", a package aiming to protect owners of computers worth up to \$40,000 each and other electronic equipment worth up to \$75,000 against losses caused by accident, negligence, theft, electrical breakdown, water damage and

lightning damage. Data reconstruction costs and increased operating costs due to any of the above are also covered up to \$5000 and \$10,000, respectively. Replacement of equipment less than five years old is also covered.

**Further information:** New Zealand Insurance Co Ltd, 20 Bond St, Sydney 2001. Telephone: (02) 232 0122.

## Micro safe

CHUBB has produced a micro safe to protect magnetic media



from heat and humidity — apart from possible "alienation". The Micro Cabinet, a castor-borne compact contraption that fits under a table next to the computer, is claimed to shield delicate data from fire, dust, electro-static damage, humidity and unauthor-

ised access with a steel casing, a multi-layer thermal construction and special seals around the slam-action door. The cabinet is rated to pass one-hour fire testing standards set for microfloppy protection and is claimed to survive a 10m drop while still red hot from a 1090 degree Celsius furnace.

**Further information:** Chubb Australia Ltd, 824 Elizabeth St, Waterloo, NSW 2017. Tel: (02) 699 3100.


**Enter H508 on Enquiry Card**

## In the Beginning

THE Australian Beginning is offering electronic mail, electronic shopping, a special interest bulletin and access to a wide variety of information and services, such as stock exchange price information. It also offers users a variety of computer programs. The service enables you to send telexes. Membership costs about \$40, and connection to the service is via a modem which uses existing telephone lines, Telecom's national communication network, Austpac, and an interface.

**Further information:** The Australian Beginning, 24 Camberwell Rd, Hawthorn East, Vic 3123. Tel: (03) 813 1133.

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# DATATREE

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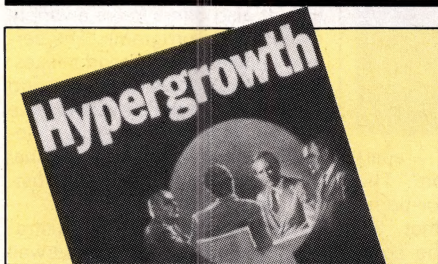
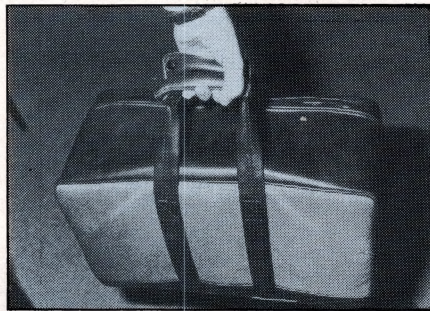
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# NEXT ISSUE

## PORTABLES

Despite the enthusiasm of the computer industry for portable computing and its establishment as a major microcomputing genre, designers are still searching for effective hardware and software combinations. Neville Angove surveys the market and presents recent accomplishments.



## HYPERGROWTH

We publish an extract from Adam Osborne's new book *Hypergrowth*, an account of the rise and fall of Osborne Computer Corp.

## SOFTWARE COPYRIGHT

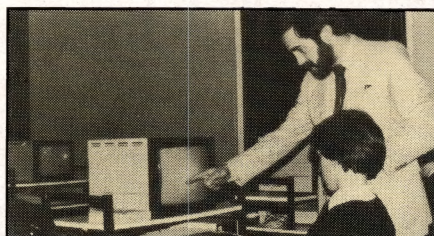
Roger Clarke summarises the events of the past six months and explains why software piracy was outlawed. He also considers the relevance and effectiveness of the present situation.

The Special Printer edition of *Australian Micro Computerworld* included a brief review of the Nakajima NP-2200 dot-matrix printer. The contact name was Ampec Electronics Pty Ltd. We have been informed that Ampec does not distribute the Nakajima. We have also been informed that the only authorised distributor is the ALL TYPEWRITER COMPANY of Chandos Street, St. Leonards, NSW.



## EDUCATION

The second National Computer Education Conference is on at Sydney's Macquarie University at the beginning of September. Ian Webster considers the achievements of the past decade and the prospects for the future.



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